SACKETS HARBOR GREEN GUIDE

COMPILED BY: GRENEW, 2008

This document was the result of a collaborative partnership between the community members of Sackets Harbor and students in the Environmental Communication option in Environmental Studies at the State University of New York College of Environmental Science and Forestry in Syracuse, NY.

We offer our gratitude to Mike Kinnie, Sackets Harbor Mayor; Dave Altieri, Sackets Harbor Heritage Area Director; and the Sackets Harbor community for the opportunity to serve their community and for their essential contributions to the Community Conversations and this green guide.

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Introduction

This guide was originally created to help the Village of Sackets Harbor, on the south shore of Lake Ontario in upstate New York, implement its existing management plans in the most sustainable, green ways. Sackets Harbors wanted to achieve its desired future as a model green community, and it wanted to serve as a role model to other communities who wanted to start thinking about how to move towards sustainability. The Village was assisted in launching its Green Initiative by students from the State University of New York College of Environmental Science & Forestry in Syracuse, NY. Calling themselves GReNew, the students designed and hosted two energetic Community Conversations and produced this guide. We anticipate a continuing, mutually beneficial relationship with the Village.

GREEN? SUSTAINABILITY? What does it mean for a community to "go green" or be "sustainable?" In 2008, it is universally recognized that traditional energy sources, like fossil fuels, are becoming quite limited and more unstable. At the same time, energy prices are spiraling higher and higher.

In addition, our past decisions about how to live and work have caused significant damage to the environment, and put human health, economies, and communities' quality of life at risk. Everything on the planet (water, air, critters, humans, land, etc.) is interdependent and connected in what are called ecosystems. The overwhelming agreement by scientists and governments is that our activities are causing global changes in the planet's fragile ecosystems, and that impacts not only present communities but also their children, grandchildren, and future generations.

As a result, more and more communities are choosing to "go green" to improve their current and future quality of life. Going green means making choices now that will have the least impact on the environment over the long term and sustain economies in ways that don't jeopardize future generations' ability to have what they need. This is also called sustainability.

Going green produces significant environmental benefits for a high quality of life now and for future generations. It also produces economic benefits such as increased efficiencies and energy cost savings. It also produces health benefits such as cleaner indoor and outdoor air, clean water, environmentally friendly waste water treatment, and opportunities for healthy recreation. By making decisions now and planning for a more sustainable future, the Village of Sackets Harbor will enhance the quality of life now and for the future. It can become a model for other communities.

Communities can take many actions to be more green and sustainable. Some actions can be done individually. Others can be done as a community. Some are easy and can be done quickly. Others require planning. These actions include making environmentally friendly decisions about many things like:

- energy efficiency
- cleaner air and water
- development that uses land wisely
- conserving water
- protecting farmland & open space
- reducing waste
- how far food travels to your plate
- supporting local businesses
- transportation & parking
- recreation
- historic preservation
- educating children about sustainability
- building with green material

The resources about sustainability and going green are simply exploding. Information, resources, programs, specific topic guides, web sites, conferences, and documents seem overwhelming. In spite of good intentions, community members and elected officials often don't have the time and/or resources to delve into them to make sense for their community. That's where we came in. We are GRenew.

GRenew! In January 2008, Sackets Harbor Mayor Mike Kinnie and Heritage Area Director Davie Altieri approached Professor Sue Senecah at the State University of New York College of Environmental Science & Forestry 70 miles to the south in Syracuse. Senecah's specialty is community engagement. As Mayor Kinnie and Director Altieri presented their vision for a sustainable Sackets Harbor, a plan emerged. Senecah's spring semester students in the Environmental Communication Workshop might be interested in using the semester to assist the Village. After meeting with the 10 seniors and 5 graduate students in the Environmental Studies Department's Environmental Communication Program, the plan was set and enthusiasm ran high.

The 15 students formed GRenew, a consulting team to help fast track the Village's *thinking about how it could implement its Local Waterfront Revitalization Plan and Heritage Area Management Plan* in the most sustainable ways. To do that, GRenew designed and led two Community Conversations and produced this guide. We anticipate a continuing, mutually beneficial relationship with Sackets Harbor involving other ESF faculty and students.

COMMUNITY CONVERSATIONS

The way that a community makes its decisions to achieve its desired future is a measure of its sustainability. So, how does sustainability happen? Who is involved? In a word, everyone! A community needs to commit to educating themselves and taking actions to become more sustainable, from individuals to municipal infrastructure. Dialogues, learning, and deliberating leading to action must be ongoing. Involvement must be an integral part of the initiative, not a side bar. Sustainability doesn't happen overnight, but to happen at all, a community and its leaders need to think, explore, talk, and make decisions together now.

To launch Sackets Harbor Green Initiative, GRenew designed, promoted, and facilitated two Community Conversations in April 2008. Over 100 community members engaged in the lively 2.5 hour events held in the municipal building. Participants praised the Conversations and the Village's commitment to sustainability. The productive Conversations produced rich knowledge and information on which to base action.

The Village web site at http://www.sacketsharborny.com has information, announcements, and documents available. Expect more community conversations. Talk with your neighbors, family, co-workers, friends, & church members. Talk with your leaders. Provide information to them. Get involved in events. Have your civic group sponsor a speaker or another community conversation. Sponsor projects. Imagination and involvement are the keys!

THE GREEN GUIDE

In addition to the Community Conversations, GRenew produced this Green Guide as a draft resource to provide information and guidance to the Village in its goal to become more sustainable and serve as a role model for other communities. Although lots of information exists as well as some plans from other communities, GRenew recognized the need for a comprehensive, basic resource for local communities. We have combed through the materials, the plans, the programs, and the resources to fast track your community's ability to act. This guide is a living document and we anticipate that it will continue to be improved, enlarged, and modified. The point is to get started.

COST of GOING GREEN?

A final note about a question often raised. What will it cost to green a community? What is irrefutably clear is that the cost of inaction is much higher. Responsible communities cannot afford NOT to consider sustainability in making decisions about their futures.

Some actions for sustainability are inexpensive and quick to implement. Others take some longer term planning & funding. This green guide will assist the Village to identify potential projects and helpful resources, and pursue funding for them.

Many funding resources and programs for technical support are available for communities pursuing green initiatives. Also, over the long term, the implementation of sustainability plans in other communities typically results in significant cost savings over time due to energy efficiency initiatives and more effective environmental management programs. Therefore, although new funds will be required from state and federal sources as well as not-for-profit foundations, existing funds in current budgets will be released to be used in other ways.

HOW THIS GUIDE IS ORGANIZED

This guide is organized to run parallel to the Village's Local Waterfront Revitalization Plan and Heritage Area Management Plan. Each section provides definitions, discussion, resources, and in some cases, options for Village action.

Transportation

Sacket's Harbor is a small, quaint village which thrives on summer tourism. Improving transportation around the village can make it easier for both residents and visitors to get around.

In the last hundred years we have made monumental advances in our transportation technologies. Wonderful inventions such as the train, bus and airplane have allowed us the freedom to travel and explore this great planet for a lower price. Industrialization gave us the ability to mass produce public transit vehicles so that everyone could be free to move. Unfortunately we are still using primitive and environmentally harmful petroleum fuels to propel our mass transit services.

Public Transportation, while maybe not as enjoyable as commuting in your own personal vehicle, does ease congestion, reduce emissions, and give you plenty of quality time to people watch, as well as get to know your "neighbors." In addition, public transportation allows you to relax, read or nap during that commute instead of fighting and stressing and feeling the road rage. So, what do we mean by public transportation? Well, for this article we are focusing on buses, trains, planes and ferries/boats, whether used for the daily commute or just to get around. For those of you interested in leaving that car at home, these tips discuss the merits of public transportation as well as offer suggestions for how to expand and improve public transportation in your community.

The Green Transportation Hierarchy

http://www.transalt.org/files/newsroom/magazine/012Spring/09hierarchy.html

The green transportation hierarchy is the basic concept behind transportation reform groups all over the world, including Transportation Alternatives. The hierarchy puts city-

friendly cyclists and pedestrians first. It rewards their low cost, space efficiency, and zero environmental impact. Trucks are not last because they perform vital commercial functions in cities. An important part of the green transportation hierarchy is that trucks get priority over personal automobiles for scarce curbside parking.

- Include tips individuals can do to reduce their gas consumption with regard to the personal automobile:
    - Slow down. Driving 65 MPH, rather than at 75 MPH, can increase your fuel economy by 15 percent.
    - Behave. Aggressive driving, such as 'jackrabbit' starts and slam-dunk braking, can reduce your highway mileage by a whopping 33 percent.
    - Keep your tires properly inflated. Under-inflated tires waste gas, and wear out the treads, too. Tire pressure changes one pound for every ten degree Fahrenheit change in the outside temperature, so if you haven't checked your tires since you stopped wearing winter mittens, you are wasting gas. And money.
    - Get rid of the junk in the trunk. Manufacturers are squeezing out every spare ounce from body parts to reduce weight and increase fuel efficiency. So why are you carrying around everything but the kitchen sink? Junk in the trunk reduces fuel efficiency.
    - No idling. Get in the car and go. Sitting there with the motor running gets you zero MPG. That's why hybrid cars are so much more fuel efficient than their comparable-sized gas only siblings -- when a hybrid is not moving, it switches to the electric motor, which doesn't use gas.
    - Get regular tune-ups. Just replacing your air filter can improve mileage by 10 percent.
    - Check your gas cap. Be sure there’s a tight seal, to prevent that high-priced octane from vaporizing. Nearly 20 percent of vehicles on the roads have gas caps that are damaged, loose or are missing altogether, wasting some 147 million gallons of gas every year.
    - Fill-up in the morning or evening, not mid-day. Why? Because gasoline expands with warmer temperatures. You'll get more gas and less air when the temperature is cooler.
    - Pump your gas slowly. Use the slow setting on the pump trigger to minimize the amount of money-wasting vapors you are putting into your gas tank.
    - Of course, you could also drive less, carpool, take the train, walk.

Green hybrid trolley system

Trolleys are manufactured by Downey, California based Ebus, Inc. Ebus hybrid-electric trolley systems seat approximately 22 people and an additional 15 passengers standing, The hybrid-electric system propels the trolleys using an electric motor powered by a battery pack. The nickelcadmium (NiCd) batteries are recharged by a low-emission, propane-fueled Capstone MicroTurbine™ auxiliary power unit (APU), which extends the

range of the trolleys. The design of the trolley also incorporates regenerative braking, which provides additional energy to recharge the battery pack.

Bicycle Transportation

Bicycles, referred to affectionately as HKEVs (Highest Known Efficiency Vehicles) by Bill Nye the Science Guy, are quite literally the most efficient machine ever invented for moving a people. It has become common practice at events advocating bicycle awareness to affix a "frame" to a bicycle rider that takes up the same amount of space that an automobile would. In the case of an SUV, the point is quite starkly made that transportation via bicycle is quite a bit more efficient compared to even a compact car. In the space it would take to park five people's personal vehicles during a public event, you could comfortably store hundreds of bicycles—not to mention the greenhouse gases that aren't being released by burning fuel, as well as the many other benefits which include getting exercise, freedom from auto insurance and astronomical fuel prices, and experiencing the weather, wildlife, and community at a pace that allows real appreciation of such things.

There are many amazing opportunities that the Village of Sacket's Harbor could exploit regarding bicycles. For one thing, touring Sacket's Harbor by bicycle would be an exciting, enjoyable, and "green" way to tour the village and its cultural and historical heritage. The flat grading of the land around the village provides an exemplary bicycle environment offering leisurely and pleasurable biking. The historic, small-town nature of Sacket's Harbor, as well as easy access to waterfront routes provides cyclists with opportunities for sightseeing, touring, education, and exercise in a splendid and enjoyable atmosphere. The village is sitting on a prime opportunity to develop a bicycling-based tourist route that passes through the village main street allowing for stop-offs at local stores and eateries, with the capacity to potentially connect to the historic areas and waterfront. Combined with a nature/science trail system and interpretive sign installation throughout the village area, a tour-by-bicycle promises to become a unique and satisfying attraction to visitors and vacationers alike.

The village of Sacket's Harbor can try to become a Bicycle Friendly Community (BCF) to promote such activities. "BCF" is an awards program that recognizes municipalities that actively support bicycling. It also provides safe accommodation for cycling and encourages its residents to bike for transportation and recreation.

Some changes Sacket's Harbor could implement:

- Add bike lanes around the village
- Promote bicycle safety
- Have bicycle education classes
- Add bike lock-up stations
- Encourage townspeople to ride bicycles
    - Frame it as both family and environmentally oriented.

http://greentravels.blogspot.com/

http://web.uccs.edu/hnapierk/portfolio/bibl-metaphors.html

Residential, Commercial, Municipal Energy Policy

On-site energy usage is an area of interest that not only poses a great deal of influence over the wellbeing and sustainability of the natural environment and its natural resources, but also directly affects the financial wellbeing of the homeowner as well. In an age of burgeoning energy prices, in addition to the environmental benefits of responsible energy use, wise homeowners also have the prospect of seeing the financial benefits of these practices come to fruition. In this section, we will outline some of the practices and strategies you can adopt to further your cause in both protecting our common environment and realizing large-scale monetary savings in the process.

Although not directly relative to energy in and of itself, many small grassroots organizations have come about in recent years as a response to the seemingly ubiquitous presence of consumerism in our society. Included among these organizations is the local New Environment Association which can be perused online at http://web.syr.edu/~hs38/neaindex.htm. This is only an example of one of the many organizations designed for the aforementioned purpose. To gain a perspective of the foremost organization of this kind, visit http://sfcompact.blogspot.com/, a site dedicated to The Compact, a nationwide organization dedicated to the promotion of voluntary simplicity, and the emblematic and practical rebuke of a society founded in rampant consumerism. These web sites, as well as myriad others designed by organizations espousing an ideology of voluntary simplicity offer numerous solutions for almost innumerable forms of energy savings. The hallmark of most of these organizations is their flexibility and collective creativity. Voluntary simplicity is one of the greatest general responses a homeowner may formulate with regard to dealing with energy concerns, for it is an extremely broad and overarching strategy with outstanding potential for energy savings in an almost innumerable array of alternative solutions for commonplace household energy uses. Due to the vast numbers of progressively-minded individuals claiming membership, most of these organizations are never at a loss for ideas, most of which are too broad and varying to be adequately discussed here. Perhaps the best attribute of membership and involvement with small grassroots organizations is the fact that out of these networks come solutions tailored for the individual – at least to a greater degree than that which can usually be found through internet searches of databases holding largely general, anonymous checklists of tips and strategies for household energy conservation.

Specific Tips & Strategies – ENERGY STAR

Home buying is complex enough without having to know all the details of energy-efficient construction. Instead, look for the government-backed ENERGY STAR label to easily identify homes that are truly energy efficient. Find the house of your dreams and enjoy peace of mind knowing that it meets strict energy efficiency guidelines.

Compared with standard homes, ENERGY STAR qualified homes use substantially less energy for heating, cooling, and water heating-delivering $200 to $400 in annual savings. Over the average 7 to 8 years you may live in your home, this adds up to thousands of dollars saved on utility bills. Additional savings on maintenance can also be substantial. Financing your home purchase using an energy efficient mortgage can

also lead to savings. Properly installed energy-efficient improvements deliver better protection against cold, heat, drafts, moisture, pollution, and noise. An energy-efficient home helps ensure consistent temperatures between and across rooms, improved indoor air quality, and greater durability. To date, more than 5,000 home builders have partnered with EPA to construct more than 840,000 ENERGY STAR qualified homes. By the end of the decade, more than 2 million homes are expected to earn the ENERGY STAR. The trend is clear. By choosing a home with the ENERGY STAR label, you can be confident that it will have an increasingly valued feature when the time comes to sell. Did you know that your home can be a greater source of pollution than your car? In fact, 16 percent of U.S. greenhouse gas emissions are generated from the energy used in houses nationwide. Energy used in our homes often comes from the burning of fossil fuels at power plants, which contributes to smog, acid rain, and global warming. Simply put, the less energy we use in our homes, the less air pollution we generate.

Heating and Cooling

Learn to make smart decisions about heating and cooling efficiently. Change your air filter regularly, install a programmable thermostat, seal your heating and cooling ducts, and consider installing ENERGY STAR qualified heating and cooling equipment.More than 50 types of products can earn the ENERGY STAR, including appliances, lighting, home electronics, and home office equipment. ENERGY STAR qualified products meet strict energy efficiency guidelines set by the U.S. EPA and U.S. Department of Energy. They use less energy, save money, and help protect the environment. A whole-house assessment by a contractor participating in Home Performance with ENERGY STAR can uncover your home’s performance problems and identify improvements that, when made together, can greatly improve your home's energy efficiency and comfort. The contractor can also help you get the work done right. Find out if Home Performance with ENERGY STAR is available in your area at http://www.energystar.gov/index.cfm?c=home_improvement.hm_improvement_hpwes_partners.

Making your home more energy efficient with ENERGY STAR can help to reduce high energy bills and improve comfort. Many common home problems like moisture on window panes; ice dams; peeling paint; and mold, can also often be solved by taking steps to improve energy efficiency.Improving energy efficiency with ENERGY STAR is also an important first step in the growing trend of “green remodeling.” That’s because the energy we use in our homes often comes from the burning of fossil fuels at power plants, which contributes to smog, acid rain, and global warming. So, the less energy we use in our homes, the less air pollution we generate.ENERGY STAR can guide you in making your home more energy efficient — whether you do-it-yourself or hire a qualified professional. Take these steps to get started or use the new ENERGY STAR Home Advisor to get specific, customized recommendations on how you can make your home more energy efficient, cut utility bills, and improve comfort — all while helping to protect the environment.

The average family spends $1,900 a year on energy. Listed below is an interactive tool of that can help you to perform simple, and productive energy audits to get you on

your way to saving your hard-earned dollars, and protecting the environment. Learn how to reduce the amount of energy used in every room in your house with this interactive tool. Follow www.energystar.gov/home to learn how. Identify and learn how to address home problems to make your home more comfortable, and at the same time improve its energy efficiency by following this link; www.energystar.gov/homeimprovement. Compare your home's energy efficiency to similar homes across the country and get recommendations for energy-saving home improvements from ENERGY STAR at www.energystar.gov/homeenergyyardstick.

Learn how to improve your home's "envelope" or "shell" — its outer walls, ceiling, windows, and floors at www.energystar.gov/homesealing. ENERGY STAR qualified products in more than 50 categories are eligible for the ENERGY products information STAR label. These products use less energy, save money, and help protect the environment. Ask for the ENERGY STAR when you are shopping. For more information follow www.energystar.gov/products. Purchase select ENERGY STAR qualified products, and you may qualify for product tax incentives and be eligible to claim a tax credit of up to $500! Learn how at www.energystar.gov/taxcredits.

ENERGY STAR partners occasionally sponsor special offers, such as sales tax exemptions, credits, or rebates on qualified products. Learn more at www.energystar.gov/rebatelocator. Learn about the features and benefits ENERGY STAR qualified homes offer homebuyers at www.energystar.gov/homebuyers. Use the New Homes Partner Locator to find home builders and developers that build ENERGY STAR qualified new homes; lenders that offer energy-efficient mortgages; utilities that offer special incentives to buyers of ENERGY STAR qualified new homes; and home energy raters that can verify the energy efficiency of a home at www.energystar.gov/homebuilders.

ENERGY STAR goes further with their Change a Light Pledge. Pledge to replace your incandescent light bulbs with ENERGY STAR qualified compact fluorescent light bulbs to save money and energy. If you change the five most frequently used light fixtures or the bulbs in them with models that have earned the ENERGY STAR, you could save more than $65 each year in energy costs. Learn more at www.energystar.gov/changealight.

For more information
www.energystar.gov *or* 1.888.STAR.YES (1.888.782.7937).

EmPower New York

Who is Eligible? Electric distribution customers of a participating utility (see New York Energy $mart below) that live in buildings with 100 units or less, and either participate in a utility payment assistance program or have a household income below 60% of state median income are eligible (i.e., HEAP eligible). What does this Program offer? The focus of EmPower New York is on cost-effective electric reduction measures, particularly lighting and refrigerator replacements, as well as other cost-effective home performance strategies such as insulation, and health and safety measures. On-site energy

use education provides customers with additional strategies for managing their energy costs. What is the Cost? There is no cost to the customer. In rental situations, certain measures that directly benefit the eligible tenant are eligible without a landlord contribution. Additional measures generally require a 25% landlord contribution. Who Provides Services? The New York State Energy Research and Development Authority (NYSERDA) contracted with Honeywell International to implement the EmPower New York program. The energy efficiency services are delivered by private contractors and participating weatherization agencies, all of whom are Building Performance Institute accredited. How do you apply? Referrals will be accepted from participating utilities, local Offices for the Aging, and weatherization agencies. Energy efficiency services are prioritized based on the potential for cost-effective energy usage reduction. For additional information contact Honeywell International at 1-800-263-0960.

All New York Energy $martSM Programs are funded by a system benefits charge (SBC) paid by electric distribution customers of Central Hudson, Con Edison, NYSEG, National Grid, Orange and Rockland, and Rochester Gas and Electric. NYSERDA, a public benefit corporation established by law in 1975, administers SBC funds and programs under an agreement with the Public Service Commission. New York Energy $mart Programs are designed to lower electricity costs by encouraging energy efficiency as the State's electric utilities move to competition. The programs are available to electric distribution customers (residential, commercial, institutional, and industrial) who pay into the SBC. New York State Energy Research and Development Authority
17 Columbia Circle Albany, New York. 1-866-NYSERDA, local: (518) 862-1090 , fax: (518) 862-1091 www.nyserda.org.

Zero Energy Buildings

Discover what "zero energy" means and which facilities have the most potential to achieve that status. Imagine a facility that generates enough energy to meet all its own needs: This is the philosophy behind zero-energy buildings (ZEBs). The concept isn't new, but the implementation is. Zero-energy homes are more the norm than zero-energy commercial buildings, but that may soon be changing. Companies such as San Jose, CA-based Integrated Design Associates Inc. (which is building the Z2 Design Facility highlighted in Building a Zero-Energy Commercial Office) are striving for net zero energy and zero carbon emissions. As the idea gains traction, researchers work to develop innovative technologies that can make ZEBs a widespread possibility for all future new construction projects. Despite the fact that the application is somewhat limited today, the quest for zero energy remains one of the most dramatic means for reducing greenhouse-gas emissions attributed to commercial buildings. While the term "zero-energy building" has many definitions, it is most often defined as a building that produces as much energy on-site as it consumes on an annual basis. They are actually referred to as net-zero-energy buildings because they do use energy; however, the supply from on-site generation is equal to (or greater than) the facility's demand.

How to Achieve Net Zero Energy

A ZEB is only possible if three things happen: 1) the goal is set early and the project team makes integrated decisions, 2) energy consumption is cut dramatically, and 3) an investment in on-site power generation is made.

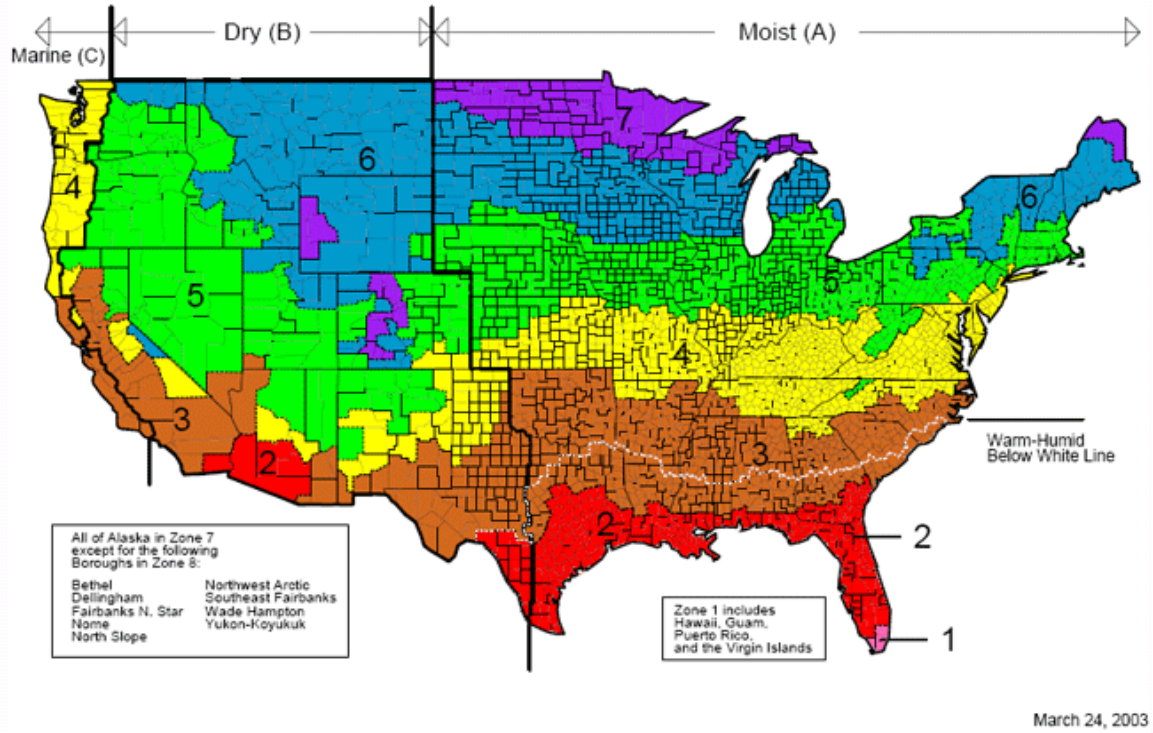
1. INTEGRATE DECISIONS EARLY. All members of the project team (especially the architect and mechanical and electrical engineers) must understand the impact of their decisions and design the building and its systems together. "An integrated approach - rather than just addressing systems or subsystems in isolation - is essential," explains Philip Haves, leader of the commercial building systems group at Berkeley, CA-based Lawrence Berkeley National Laboratory. David Kaneda, principal of Integrated Design Associates (IDeAs) Inc. and owner of the Z2 Design Facility (a ZEB project scheduled for completion this month) agrees: "It's not quite ‘design as usual.' Having a team that knows how to work together and [individuals who] understand how what they do affects what the rest of the team does is important." In many cases, trade-offs will be made. Every decision and how it will affect energy consumption must be considered. "The details are really important," says Paul Torcellini, team leader for commercial buildings research, National Renewable Energy Laboratory, Golden, CO, about examining everything from daylighting to what kind of transformers are being used.

2. INCREASE ENERGY EFFICIENCY. Building a ZEB without drastically reducing energy consumption is impossible. Torcellini recommends shooting for 20,000 to 25,000 BTUs per square foot per year, or roughly 50- to 70-percent more efficient than the ASHRAE 90.1-2004 standard. "The national average [for commercial buildings] today is somewhere between 70,000 and 80,000 BTUs per square foot," he says. Look at the systems and equipment that consume the most energy first - this is where the biggest efficiencies can be reaped. "The three big energy consumers in a building are the lights, the air-conditioning, and the equipment that's plugged into the walls," says Kaneda. Daylighting is the No. 1 energy-saving strategy for commercial buildings, according to Torcellini. "Approximately 80 percent of the commercial floor area in this country is within 15 feet of an exterior surface (i.e. the roof, windows, or walls). There is a huge potential to offset lighting loads with daylighting," he explains. Additional energy-saving strategies include natural or mixed-mode ventilation, radiant heating/cooling, evaporative cooling, use of a dedicated outside air system (i.e. separate ventilation and thermal conditioning), ground source heat pumps, and passive solar strategies.

3. INVEST IN ON-SITE POWER GENERATION. According to the National Renewable Energy Laboratory, one of the easiest supply-side technologies to implement is a rooftop photovoltaic (PV) system. While the cost of PVs is still relatively high, available tax credits, financial incentives, and attractive loan terms can help with the initial expense. According to an article published on GreenBiz.com, when a family-owned Pepsi-Cola business in Klamath Falls, OR, pursued a goal of net zero energy in 2004, it received more than $1.6 million dollars from incentives, tax credits, and a loan to help cover the expense of its new solar electric system.

The Ideal ZEB

Not all facilities can be ZEBs. According to the U.S. Department of Energy (DOE) and the National Renewable Energy Laboratory (NREL) in a June 2006 conference paper titled Assessment of the Technical Potential for Achieving Zero-Energy Commercial Buildings, 22 percent of buildings today have the potential to be ZEBs. Through advancements in technology, an estimated 64 percent of buildings could be ZEBs by 2025. New construction projects offer the greatest opportunity to achieve zero energy. "In a new building, you have a lot more opportunity to think about how the building systems interact. If you're doing a retrofit of an existing building, it's often difficult to put more insulation in the walls or on the roof," explains Drury B. Crawley, team leader, commercial buildings R&D, Office of Building Technologies, Energy Efficiency and Renewable Energy, U.S. Department of Energy, Washington, D.C. The new construction plans for a ZEB can incorporate passive solar design and a building orientation conducive to north- or south-facing windows. "Most energy savings come at little or no additional cost from the initial design of the building," says Torcellini. Low-rise buildings are ideal ZEBs. "There's more opportunity to use daylighting through skylights or other openings in the roof," Crawley explains. Additionally, enough PVs can be placed on the building's roof to serve the facility's energy needs. "After more than 3 or 4 stories, there isn't enough roof area to place sufficient photovoltaics because your energy densities compared with the footprint of the building are so high," says Torcellini. Warehouses and standalone retail stores have wonderful ZEB potential for this reason. "If the mandate was to make all buildings as low energy as possible and to cover half the roof with photovoltaics, warehouses would be zero energy, but medium- to high-rise offices would never make it," he concludes. Climate is also a factor in the feasibility of ZEBs. For example, installing a daylighting system may not be as cost effective in West Virginia (where only 40 percent of the days per year are sunny) as it would be in Arizona (where the sun is out 90 percent of the days per year). Natural ventilation is another strategy with widely varying benefits. "It can make a significant dent in your HVAC loads, but it is very climate specific," says Haves. "It's easy in San Francisco, but needs to be supplemented by mechanical cooling for a significant fraction of the year in Houston." Using the climate zones designated in ASHRAE 90.1-2004, the DOE/NREL conference paper reports that the best prospects for ZEBs are buildings located in zones 1, 2, and 3 (see the map below).



The Future of ZEBs

Commercial buildings' contribution to the problem of global warming is increasing. "The amount of commercial floor space that we are adding is growing faster than the [implementation of] energy-efficiency features that we are putting into buildings. The consequences of that are more resource depletion and emissions, and strain on the infrastructure," says Torcellini. Increasing energy efficiency and encouraging the production of on-site power generation will significantly reduce the negative impact that commercial buildings have on the environment. Low- and zero-energy buildings are healthier, more comfortable, and pollute less. They are also less expensive to operate. Striving for the ultimate in energy efficiency may also give the building a competitive marketing or leasing advantage. "If building owners/developers want to keep up with their competition, they need to stay on top of energy-saving strategies. Energy costs in buildings have already doubled over the last 10 years, and, in most places in the country, they are going to continue to rise. Energy efficiency is becoming more and more of a factor when tenants are looking for space. They want to know what the energy bill is going to be," says Peter Rumsey, principal, Rumsey Engineers Inc., Oakland, CA.

The Energy Audit Program

Who is eligible? Industrial and commercial facilities, State and local governments, not-for-profit and private institutions, colleges and universities,
and K-12 schools. Facilities must have less than $50,000 in annual electric bills to be eligible. What does this program offer? This program provides energy audits for small businesses and other facilities to help them make informed electrical decisions and implement energy-efficiency strategies. Audits help identify improvements that yield electric savings. Audit costs vary, depending on the customer’s annual electric bills.

How do you apply? Please contact service providers in your region. An application form and a list of regional contacts are provided on the back.

How Your Business Can Obtain the "Lowest Possible" Energy Costs

When deregulation removed the monopoly on energy supply, energy purchasers became free to direct their utility to use an alternative supplier to transport natural gas and electricity to their meter. This new competition allowed users to search out the lowest supply rate vs. paying "retail rates" directly from the utility. In 1997, Energy Cooperative of New York was founded to provide businesses across New York State with the best purchase leverage in the state. Because it is a not-for profit member-owned cooperative, all savings are passed along to the members in lower natural gas and electric costs. The Cooperative buys energy at the lowest wholesale price and passes along those savings to our members for only a flat nominal administration fee based on volume used.

Who can be
a member of ECNY?
Any New York State business or commercial operation can apply for membership and start saving on energy costs immediately. These businesses include:

- Manufacturing/Industrial operations
- Colleges & Universities
- Hospitals
- Nursing homes
- Office buildings
- Apartment complexes
- Retail stores
- Restaurants

A Flat Nominal Fee
Is All Our Members Pay
No mark-ups. No profit margin.We bill you the wholesale price we pay plus a nominal flat administrative fee based on the volume you use. There is no incentive for ECNY members to buy energy at higher prices: Here's a current example of the fee:

Natural Gas:
Fee of $0.11 per metric cubic feet (Mcf)

Electric:
Fee of $0.0012 per kilowatt hour (Kwh)

Calculate Your Own Savings (Commercial Customers Only)

We will compare your current utility costs with our costs and provide you with the approximate amount we can save you. If you would like to receive a "Savings Analysis" based on your actual energy usage, please complete the *Billing History Release Form* (PDF File) with your account information, include a complete copy of the utility bill for each account and fax or mail this information to the Energy Cooperative of New York.

North Country Wood Biomass Alternative Energy Feasibility Project for Municipal and Institutional Facilities

The Department of Environmental Conservation (DEC) and a coalition of organizations

known as the Adirondack Energy $mart Park Initiative (E$PI) are administering a grant program for municipal and institutional facilities that are interested in exploring the feasibility of using locally produced wood to reduce annual heating costs. It is expected that colleges, prisons, schools, municipal buildings, and many other small- to medium-scale energy facilities will benefit most from this program because they are large consumers of fossil fuels and the buildings involved often meet the unique requirements needed to utilize wood for fuel.

Potential Savings on Heating Costs by Using Local Wood: Every year, North Country building managers spend millions of dollars on fossil fuels to heat their buildings, many of which leak heated air throughout the harsh winter season. The DEC and E$PI have developed a program to study ways to convert some facilities to the use of locally abundant and sustainable woody biomass fuels for heat, while also educating facility managers about opportunities to dramatically cut energy costs through energy conservation measures. DEC will provide 75 percent of the cost of a study to assess the feasibility of utilizing woody biomass for heat in qualifying facilities. Each study will evaluate costs, savings and site specific engineering concerns. Two or three local conferences will be scheduled in early 2008 to discuss woody biomass heat energy opportunities in-depth. Field trip(s) to facilities currently utilizing wood for heating will also be scheduled in 2008.

Woody biomass for heating is a locally produced product from on-going timber harvests and sawmill/forest products manufacturing operations. It is a "renewable" and "carbon neutral" source of heating energy because, unlike fossil fuels, the carbon released from burning wood is recaptured by the growth of new trees. Also, many sources of wood harvested in the North Country are certified as environmentally "green," or sustainable, as a result of enrollment in various recognized forest certification programs. Woody biomass costs less than fossil fuels on a BTU basis, and is a viable alternative for many buildings in New York's North Country.

For More Information Contact: NYS DEC Forest Utilization Program, 518-402-9415 www.dec.ny.gov/lands/4963.html The Adirondack Energy $mart Park Initiative 1-866-260-4837 www.energysmartpark.org

More Alternatives

An approximate installed cost for a typical two-kilowatt PV system is $16,000 before incentives. Through the New York Energy $mart Program and a New York State tax credit, the initial cost of this system can be reduced to $6,550 if the PV system is on a New York ENERGY STAR labeled home. A two-kilowatt system will produce about 2,300 kilowatt hours of electricity annually. A PV system is an investment that helps the environment and makes you less vulnerable to increases in the price of electricity.

To learn about PV incentives available through the New York Energy $mart Program, please call 1-866-NYSERDA or visit www.PowerNaturally.org. For information about New York ENERGY STAR labeled homes, call 1-877-NY-SMART or visit www.GetEnergySmart.org.

What are photovoltaics? Photovoltaic or PV systems convert sunlight directly into electricity that can serve a portion of your home's electrical needs. PV systems are connected to your home's electrical service panel and are used to supplement your

existing utility service. With proper location, a PV system works anytime the sun is shining. It works best when facing south and should not be shaded by trees, nearby buildings, or other obstructions. When the PV system is generating more electricity than your home is using, and you will receive a credit for the excess power from your utility as it spins the electric meter backwards PV systems are gentle on the environment. In contrast with electricity generated by fossil fuels, PV-generated electricity creates no air or water pollution. Furthermore, when combined with a battery system, a PV unit can provide you with power when utility power is out.

Why buy a PV system? WHY put a PV system on an ENERGY STAR-labeled home? It costs less to reduce your utility bill through conservation and energy efficiency than with a PV system. An ENERGY STAR-labeled home is 30% more efficient than a conventional home. The more energy-efficient your house is, the greater the impact of a PV system. How much can you save? It depends on; how large the PV system is, how sunny the local area is, the orientation of the PV panels and how much you pay your utility for electricity. For example: A two-kilowatt PV system located on the south-facing roof of a home can produce more than 2,300 kilowatt hours per year and can typically offset 20–25% of a home's electricity needs. When combined with improving the energy efficiency of your home, the savings on your electric bill can be even more significant.

Do-it-Yourself Easy Fixes (The Low-Hanging Fruit)

If you have five minutes and your last 12 months of utility bills, use the ENERGY STAR Home Energy Yardstick to compare your home's energy efficiency to similar homes across the country and get recommendations for energy-saving home improvements from ENERGY STAR. Or, hire a professional to perform a comprehensive home energy audit. Sealing air leaks that cause uncomfortable drafts and adding insulation are two of the most cost-effective ways to improve the energy efficiency and comfort of your home. Use ENERGY STAR Home Sealing to guide you in making these improvements that every home should have.

Simple Tips and Strategies that save enormous amounts of energy with little effort

1. Cook with small appliances. Cook with your toaster oven, electric skillet and slow cooker for specialized jobs, rather than the range. Small appliances use less energy.
2. Use the microwave. Microwave ovens shorten cooking times, which saves energy.
3. Clean or replace air filters. Replace filters on exhaust hoods, humidifiers, vacuums, etc. Clogged filters impair performance and cause the units to run longer.
4. Run cold water for disposal. Hot water requires energy to warm the water. Cold water saves energy and solidifies grease, moving it more easily through the garbage disposal and pipes.
5. Purchase an ENERGY STAR model. When buying a new refrigerator or freezer, look for the ENERGY STAR label. ENERGY STAR refrigerators and freezers

can save you hundreds of dollars on your electric bill over the life of the appliance. Remember, older refrigerators and freezers use two to three times more electricity than ones that are 10 years old or less.

6. Select the right size. Determine your household's needs before purchasing a refrigerator or freezer. One that is too large wastes energy.
7. Only use one refrigerator or freezer. You can spend up to $120 in electricity per year using a second refrigerator or freezer. If you want to use a second refrigerator or freezer during holidays or for special occasions, turn it on one to two days before you need it.
8. Don't set the temperature colder than necessary. Set the refrigerator temperature between 36° F and 42° F. Set the freezer control so the temperature is between -5° F and +6° F. A small thermometer placed in the refrigerator or freezer will help you set it correctly.
9. Clean the unit. Clean dust off the condenser coils, fins, evaporator pan and motor once or twice a year. A clean unit runs more efficiently. Unplug the unit and clean with a vacuum cleaner or long-handled brush.
10. Defrost a manual-defrost unit regularly. Frost makes your unit work harder and wastes energy. Don't allow more than one-quarter inch of frost to build up.
11. Stay away from direct heat. Place the refrigerator or freezer away from direct sunlight and other heat sources such as ovens or ranges. Heat will cause the unit to use more energy to stay cold.
12. Do not place the unit in unheated space. Don't place your refrigerator or automatic defrost freezer in a garage, porch or other unheated space. If the temperature drops below 60° F, the unit will be less efficient and cost more money to operate. Or, the compressor may stop running, causing the temperature inside the freezer compartment to rise. Stored food could spoil.
13. Check the seals. Refrigerator and freezer doors should seal tightly. Loose seals cause your unit to work harder and use more energy. If you can move a dollar bill through the closed door, the seal is not tight enough. Get the seals replaced or replace the unit if it is an older model.
14. Run full loads. Always wait until you have a full load before running your dishwasher. Full loads use the same amount of hot water and energy as smaller loads. You run fewer loads and save energy.
15. Use short cycles. Select the shortest cycle that properly cleans your dishes. Shorter cycles use less hot water and less energy.
16. Skip rinsing the dishes. Rinsing dishes before loading them into the dishwasher wastes energy. If you do rinse, use cold water.
17. Clean the filter. If your dishwasher has a filter screen, clean it regularly. A clean appliance runs more efficiently.
18. Reduce the heat. Begin cooking on a higher heat setting until liquid begins to boil. Then, lower the temperature and simmer the food until fully cooked. A fast boil doesn't cook faster than a slow boil, but it does use more energy.
19. Don't peek in the oven. Resist the urge to open the oven door while baking. Every time you peek, the temperature drops 25° F and requires additional energy to bring the temperature back up.

20. Use retained heat. Turn off cook tops or ovens a few minutes before food has completed cooking. Retained heat finishes the job using less energy.
21. Consider a natural gas range or oven. Natural gas appliances cost less to operate than electric appliances and offer better temperature control.
22. Put a lid on it. Cook food and boil water in a covered container whenever possible. This traps the heat inside and requires less energy.
23. Make sure the oven seals tightly. Make sure the seal on the oven door is tight. Even a small gap allows heat to escape and wastes energy. If you can move a dollar bill through the closed door, the seal is not tight enough and should be replaced.
24. Check the oven temperature. Test the oven temperature to be sure that the setting matches the actual temperature. If the actual temperature is too high, you will use more energy than needed. Also, your food may not turn out how you anticipate.
25. Adjust the water level. If you have a washer that allows you to control the load's water level, adjust the level according to laundry load size. You can save energy by using less hot water for small loads.
26. Run full loads. Always run a full load in your washer or dryer. Running a partial load uses the same amount of energy as a full load – but you get less done. Running full loads allows you to run your washer or dryer less often.
27. Wash laundry in warm or cold water. Washing laundry with warm or cold water works your water heater less. Use hot water only when the greatest cleaning is needed.
28. Rinse in cold water. Rinse water temperature has no effect on cleaning. Rinsing with cold water saves money by heating less water.
29. Place the washer close to the water heater. Water loses heat as it flows through pipes. When the washer is located near the water heater, hot water doesn't have to travel as far to reach the washer, and less heat is lost. Insulating the pipes between the water heater and washer helps retain heat, too.
30. Don't dry clothes excessively. Drying laundry excessively uses more energy than is needed, and is hard on fabrics. If you purchase a dryer, get one with an electronic sensor that shuts off the dryer when clothes are dry.
31. Clean the lint filter. After each load, clean the filter to keep the dryer running efficiently. Also, periodically check the air vent and hose for clogging. Keeping the air vent and hose free of lint prevents a fire hazard.
32. Purchase an energy-efficient model. Although it may cost more initially, purchasing an energy-efficient model costs less to operate in the long run.
33. Purchase the correct size. Consider your family's hot water needs. If your water heater is too large, it uses more energy than needed. If it is too small, you may run out of hot water.
34. Purchase a natural gas water heater. If you currently have an electric water heater, consider replacing it with a natural gas water heater. When it comes to heating water, natural gas is less expensive than electricity, and it heats more water faster during heavy use. Consider a sealed combustion or an on-demand water heater. Both types use less energy.

35. Install your water heater near the kitchen. The kitchen is where you use the hottest water. When the water heater is located near the kitchen, hot water doesn't have to travel as far and less heat is lost.
36. Insulate water pipes. Use half-inch foam or pipe tape for insulation wherever pipes are exposed. On cold water pipes, insulate four to five feet nearest to the water heater. Pipe insulation can save you up to $25 annually.
37. Set the water temperature to 120° F. It takes less energy to heat water to a lower temperature. If you have an electric water heater, you'll have to remove the cover plate of the thermostat to adjust the temperature. For safety reasons, remember to turn off the water heater at the circuit breaker/fuse before changing the temperature.
38. Repair dripping faucets promptly. If the faucet leaks hot water, the energy used to heat it is costing you money. (One drop a second can waste up to 48 gallons a week!)
39. Install a heat loop or in-line trap. If you add a new water heater to your home, consider having a heat loop or in-line trap installed. These mechanisms can be inexpensive to install and keep hot water from moving into the piping system when you are not using hot water. Ask your plumbing contractor for details.
40. Reduce deposits and build-ups. Drain a bucket of water from the bottom of the water heater once or twice a year to reduce mineral deposits and sediment build-up. This increases water heater efficiency. Don't drain the water heater, though, if you've used it for a year or more and have never drained it. The faucet may have corroded shut and could break if you force it open. Before draining the water from an electric water heater, turn off the water heater at the circuit breaker/fuse.
41. Install water saving devices. Use low-flow showerheads on all showers and faucet aerators on all faucets to reduce your hot water use.
42. Install a water softener. If you have hard water, install a water softener to prevent mineral deposits from coating the elements. This helps prolong water heater life and saves energy and money.
43. Use a humidifier. Humidity makes you feel warmer in colder months. With the proper humidity level, you'll be able to turn your thermostat down to a lower temperature, save energy and still feel comfortable. About 20 percent to 40 percent relative humidity is recommended.
44. Remove moisture with a dehumidifier. Use a dehumidifier in warm, humid months. Less humidity helps you feel cooler, allowing you to use a higher air conditioner setting to save energy. A dehumidifier works best when air can circulate freely through it. Place it away from walls and bulky furniture.
45. Check for frost build-up on dehumidifiers. If your unit is running in temperatures less than 70° F, check it occasionally to see if frost is building up on the coils. If so, turn the unit off until the frost melts and the room is warmer.
46. Clean the unit. Dust or vacuum the dehumidifier at least once a year before you plug it in. A clean unit runs more efficiently.
47. Purchase an ENERGY STAR dehumidifier. ENERGY STAR dehumidifiers use 10 percent to 20 percent less energy than conventional models but still offer the same features – effective moisture removal, quiet operation and durability.

48. Use ENERGY STAR compact fluorescent light bulbs. ENERGY STAR compact fluorescent light bulbs last longer and use up to 75 percent less energy than standard light bulbs. You can cut your electric bill by $60 per year if you replace the standard bulbs in your five most frequently used light fixtures. Properly dispose of compact fluorescent light bulbs at your local household hazardous waste collection site.
49. Use natural lighting. Open curtains and shades during the day instead of using lighting. Consider skylights and solar tubes during remodeling or new construction design. This allows the maximum use of natural daylight.
50. Plan your lighting. Not every room needs the same amount of general light. Plan within a room to provide general background lighting and supplementary task lighting. A good lighting plan can reduce lighting costs and still provide all the light you need.
51. Use a single, high-watt bulb. Using one high-watt bulb instead of several low-watt bulbs saves energy. Do not exceed the manufacturer's recommended wattage for the fixture.
52. Control outdoor lighting. To assure only dusk-to-dawn operation of your outdoor lights, control your fixtures with a photocell or a timer.
53. Turn off lights. Turn off lights when not in use, even for short periods of time. Turning lights off and on uses less energy than if they are left on all the time.
54. Install a timer on indoor lights. Use timers to turn lights on and off to help regulate use.
55. Avoid long-life incandescent light bulbs. Long-life incandescent light bulbs are the least efficient of the incandescent bulbs.
56. Keep bulbs and fixtures clean. Dirt and dust reduce light output and efficiency. For safety reasons, don't clean bulbs and fixtures when they're hot or plugged in.
57. Position lights properly. Try to illuminate the entire activity area without creating distracting glares or shadows. To do this, position your light source closer to the area you want lit. This saves energy by not over-lighting an unused area.
58. Adjust light level. Higher light settings use more energy, so save energy by using dimmer controls, high/low switches or three-way bulbs to adjust the level of light to exactly what you need.
59. Purchase an energy-efficient model. Select an energy-efficient central air conditioner by looking at the SEER (seasonal energy efficiency ratio) rating. The higher the rating, the more efficient the unit.
60. Choose the right size equipment. Oversized equipment costs more money. A qualified heating contractor can determine the size of the equipment needed for your home. The contractor uses the size and configuration of your home to determine proper size.
61. Replace coils. To maximize efficiency, change the indoor and outdoor compressor coils when replacing an older central air conditioner.
62. Keep the thermostat clear of heat. Don't position heat-producing devices such as lamps and TVs close to your thermostat. Heat from these devices could cause the thermostat to read a temperature higher than the true room temperature. This may lead to excessive cooling and wasted energy.

63. Get your unit tuned up. Have your central air conditioner tuned up by a qualified heating contractor every other year. This can help the unit operate more efficiently and may prevent failures in the middle of peak cooling season.
64. Keep the condenser and filter clean. Keep leaves, grass and other debris away from the outside condenser. Also, clean the filter monthly and replace it as needed. (Your central AC uses the same filter as your furnace.) A clean condenser and filter help the unit run more efficiently.
65. Change your thermostat settings. Save 10 percent or more on your summer cooling costs by setting the thermostat to 76° F when at home and higher when you go away. Cooling the house when you return costs less than keeping it cool all the time.
66. Keep the sun out. Closing blinds, shades and drapes on the sunny side of your home during the day will help keep the house cooler, causing the air conditioner to use less energy in bringing the temperature to a comfortable level.
67. Cool only the rooms in use. Close unused rooms to keep cooled air in areas where it is most needed.
68. Don't make more heat. Delay chores that produce heat and moisture until the cooler parts of the day or evening. Limit dishwashing, laundering and cooking on hot, humid days. These activities make your room more uncomfortable and require your air conditioner to work harder.
69. Use the microwave. Cook using your microwave oven rather than your standard oven or range. It creates less heat and humidity in your home.
70. Turn off electronics you are not using. Don't leave electronics, such as televisions, stereos and computers, on if you don't need them – they produce heat. Extra heat requires more energy to power the air conditioner and increases cooling costs.
71. Keep vents clear. Keep furniture and drapes away from air vents. This allows the cool air to move out into the rooms and keeps your air conditioner from running more than necessary.
72. Ventilate your attic. Reduce heat build-up in your attic by installing proper ventilation. This helps keep your house cooler during the summer. A qualified heating contractor can help you do this.
73. Keep the air conditioner out of the sun. Locate the unit out of direct sunlight and avoid the south and west sides of the house. Placing the air conditioner in direct sunlight causes it to work harder to cool your home.
74. Purchase an ENERGY STAR model. ENERGY STAR room air conditioners cost at least 10 percent less to operate than conventional models.
75. Use a timer. Set the plug-in timer to turn off the air conditioner when you leave home and to turn it on just before you return.
76. Purchase a unit with varying fan speeds. Use a room air conditioner with fan speed control. This allows faster cooling when needed and quieter, more efficient operation at other times.
77. Keep the unit centrally located. To allow better air circulation, install your room air conditioner in the window or area of the wall that is nearest to the middle of the space being cooled.

78. Seal the unit. Once a room air conditioner is in place, seal the space around it with rope caulk or some other sealant to prevent warm outside air from leaking in.
79. Don't set the thermostat at high initially. When you first turn on your room air conditioner, set the thermostat at normal or medium. Setting it any colder won't cool the room any faster.
80. Keep the unit out of the sun. Locate your room air conditioner on the shady side of your home. It will operate more efficiently in a cooler location.
81. Close the fresh-air vent. Make sure the fresh-air vent is closed when the room air conditioner is operating so you aren't cooling outside air. Open the vent when the outside air is cooler to let in fresh air.
82. Remove the unit at the end of the cooling season. Take your room air conditioner out of the window when the cooling season is over. If you must leave the unit in place, cover the outside of the unit with a weatherproof cover and fill any cracks around the unit with removable caulk.
83. Use fans with your air conditioner. Fans help reduce energy costs by circulating the cool air from your air conditioner. This allows you to raise the temperature and still be comfortable. Use oscillating fans for greater circulation.
84. Use ceiling fans for air circulation. In hot weather, set the ceiling fan direction to blow air down. The air moving across your skin creates a cooling effect, allowing you to raise the temperature on your thermostat and still feel cool. In cold weather, set the fan to blow toward the ceiling. This pushes warm air away from the ceiling and evenly distributes heat in the room.
85. Use a whole-house fan. These fans are mounted in the attic and ventilate your entire home. Be sure to open some windows before turning on a whole-house fan. A qualified heating contractor can help you determine if you need a whole house fan.
86. Maintain your fan. Keep your fan in good working order. Check the manufacturer's recommendations for care and maintenance. This helps control the operating costs.
87. Purchase an energy-efficient furnace. Select an energy-efficient furnace model by looking for an AFUE (annual fuel utilization efficiency) rating of 90 percent or greater.
88. Maintain the furnace. Clean your furnace filters monthly or replace if necessary. A clean unit runs more efficiently.
89. Use natural gas for heating. Consider switching to a natural gas heating system. Natural gas is less expensive than other heating fuels.
90. Use insulation. Insulate your attic to an R-value of 38 for a gas-heated home and 50 for an electrically heated home; your walls to an R-value of 19; and your sill box (upper portion of your basement walls) to an R-value of 10. Proper insulation allows you to use less energy to keep your home warm.
91. Insulate around windows and doors. Weather-strip and/or caulk all areas of noticeable leaks around windows and doors. Removable caulking is a good option for windows that you open in summer but not in winter.
92. Change your thermostat settings. In the winter, set your thermostat at 60° F when you are sleeping or gone. Set the thermostat to 68° F when you are at home. This can save 10 percent or more on your heating bills every winter.

93. Turn down the thermostat when away. If you are going to be away for an extended period of time, turn your thermostat down to save energy but never lower than 40° F. If you have delicate houseplants, keep the setting at 50° F or higher.
94. Let the sun in. The sun's energy can have a noticeable effect on the temperature in your home, especially from windows facing south and west. Keep window shades and drapes open during winter months to let in the sun's radiant heat.
95. Warm with a space heater. A portable space heater can heat a single room without using your furnace to heat the whole house. Using a space heater to heat all or most of your home costs more. Always follow the manufacturer's safety instructions when operating space heaters.
96. Use the fireplace sparingly. Many older natural fireplaces are inefficient and draw more heat out of the house than they produce. Close the flue to eliminate drafts when not in use.
97. Consider fireplace inserts, doors or covers. If you use your fireplace often, consider these products to help reduce the heat loss in your home when using the fireplace. You save money on your heating bills while still being able to enjoy your fireplace.
98. Control air flow. If you are building a home, replacing heating equipment or remodeling, talk to your heating contractor about the options available to ensure proper air flow. Controlling air flow into and out of your home ensures energy efficiency, comfort and low energy costs.
99. Purchase ENERGY STAR windows. When installing new windows, select, at a minimum, double-paned (double-glazed) thermal windows. With existing single-paned windows, make sure you use storm windows during the winter months.
100. Purchase efficient equipment. Look for ENERGY STAR office equipment, such as computers, printers and fax machines. They use less energy than standard office equipment.
101. Don't let the computer run all day. Only power on the computer, monitor, printer and fax machine when you need them. Don't leave them on after you're finished working. Computers and other office equipment still use energy in sleep mode.

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Stormwater Run-off

What Is Stormwater Run-off?

Stormwater run-off is water from precipitation or melting snow that flows over the ground and into waterways. Impervious surfaces, such as driveways, parking lots, sidewalks and rooftops, prevent water from soaking into the ground. As water flows over these surfaces, it collects and transports soil, animal waste, salt, pesticides, fertilizers, oil and grease, debris and other pollutants into lakes, streams, rivers and other waterways (5).

What Are the Impacts to Waterways from Stormwater Run-off?

Stormwater run-off carries pollutants into waterways, and can impact plants, fish, wildlife and humans. Sediments can cloud water and degrade water quality, which inhibits plant growth and impacts aquatic habitat. Stormwater run-off from agricultural activities often adds excess nutrients to waterways. Excess nutrients cause algae blooms, which remove oxygen from the water. Fish and other aquatic organisms cannot live in water with low dissolved oxygen levels. Bacteria and other pathogens can create health hazards in swimming areas, often causing beach closures. Debris, such as plastic bags, bottles and cigarette butts, not only degrade the scenic quality of waterways, but also can choke, suffocate or disable aquatic life, such as ducks, fish, turtles and birds. Household hazardous wastes, such as insecticides, pesticides, paint and motor oil can poison aquatic life. Animals and humans who eat diseased fish and shellfish or ingest polluted water can also become sick. Often, polluted stormwater ends up in drinking water sources, which can affect human health and increase drinking water treatment costs (5).

Stormwater Run-off in Sackets Harbor

Most stormwater runoff in the Village of Sackets Harbor flows to Lake Ontario. Sackets Harbor has a system of stormwater sewers and catch basins that capture stormwater, which is deposited into Lake Ontario.
Residential and urban areas and new construction sites are major sources of stormwater run-off. Pollution from stormwater run-off can be significantly decreased by increasing the amount of pervious surface in an area; preventing erosion; and educating the public about stormwater pollution to prevent pollutants from entering stormwater drains (5).

The Sackets Harbor 2007 Local Waterfront Revitalization and Heritage Area Management Plan includes the following recommendations to prevent non-point source pollution from stormwater run-off.

- Develop a Village-wide stormwater management plan, in accordance with current EPA standards, to address any non-point sources of pollution and to establish physical and regulatory mechanisms to prevent further non-point pollution. A stormwater management plan for the Mill Creek watershed should be developed to moderate stream flow and control stream bank erosion.
- Develop a Village-wide integrated pest management system that encourages use of native or other species in landscaping and that requires no or minimal use of fertilizers, pesticides, herbicides, or fungicides.
- Consider use of oil-separating catch basins at gas stations and parking lots.
- Retain as much natural vegetation as possible, especially near the waterfront, and avoid the mass clearing of sites.
- Utilize large graded areas on the most level portions of development sites, and avoid the development of steep vegetated slopes.
- Conduct grading and clearance activities outside floodplains to the extent feasible.
- Complete construction work pursuant to a NYSDEC State Pollutant Discharge Elimination System (SPDES) permit for stormwater discharge related to construction work, and maintaining a Construction Pollution Prevention Plan (CPPP) on site for DEC inspection.
- Protect inlets to storm sewers by using suitable erosion control and filtering devices during construction.
- Continually evaluate the effectiveness of storm collection systems, and make improvements, where possible, aimed at collecting and detaining sediments in filtering catch basins and retention areas.
- Maintain adequate pump-out facilities at local marinas to discourage the overboard discharge of sewage from boats.

Stormwater Best Management Practices

The following are stormwater best management practices that could be included in Sackets Harbor stormwater management plan.

1. Preserve Open Space and Wetland Areas

Preserving open space areas and protecting and restoring wetland areas create natural detention areas for stormwater. Natural areas allow water to soak into the ground rather than flow over surfaces collecting pollutants and ending up in waterways (2).

2. In Developed Areas Minimize Impervious Surfaces

Green Roofs

Green roofs, sometimes also referred to as roof gardens, are layers of living vegetation over a waterproofing membrane on top of buildings. They retain and filter rainwater through the soil and plants' roots. Green roofs also provide energy efficiency benefits, as they also serve to insulate buildings, reducing heating and cooling costs (3).

Photo 1

According to Green Roofs for Healthy Cities, green roofs retain an average of 70 to 90 percent of the precipitation that falls on the roof in the summer months and between 25 to 40 percent in the winter (1). Any water that does run-off the roof is clean since it was filtered through the vegetation. Green roofs also slow down the rate that run-off occurs from roofs, reducing stress on stormwater and sewer drains during peak flow periods. Green roofs can be made of a variety of vegetation and involve maintenance similar to that of a garden (1).

Rain Barrels and Cisterns

Rain barrels and cisterns help to prevent stormwater runoff as well as conserve the use of water. Cisterns are storage tanks that capture stormwater runoff. Stormwater that is collected in cisterns can be used to supplement or displace existing potable water uses, such as irrigation, toilets, or cooling towers (6).

Cartridge Basins**:** *"Municipalities around the country are increasing their use of catch basin inserts to treat stormwater before it enters surface waters."*

http://www.gradingandexcavating.com/sw_0709_inlet.html

Cartridge Basins come in both rectangular and round configurations. Sizes range from up to 30 inches by 38 inches and 30-inch-diameter round grates. They have a variety of filtration media, including oil-absorbing foams, antimicrobial applications, and components for heavy metal removal.

Tests have confirmed that the Smart Sponge insert can absorb up to five times its own weight and removes 75% to 95% of the hydrocarbons present in stormwater runoff.

The biggest issue is the upfront cost: $800 to $1,000 per filter! (changed text color from gray to black)

Permeable Paving

Permeable paving refers to paving materials that promote absorption of rain and snowmelt, such as permeable concrete. Permeable concrete is a specially mixed concrete product with most of the fine aggregates, or stones, removed from the concrete mixture. The removal of the fine aggregates creates pores that allow water to travel through the

concrete to a stone reservoir underneath the pavement. This allows stormwater to be filtered, detained, or infiltrated into the ground (6).

Photo 2

There are also permeable pavers. Permeable pavers are used to intercept and transmit runoff to permeable soils or gravel layers where pollutants are filtered, runoff is slowed, and aquifers are replenished. A gravel storage reservoir used in conjunction with pavers can hold large amounts of water to help control the timing and volume of runoff. The pavers, made of concrete, brick, or recyclable plastic materials, can be incorporated into grass and open areas or installed as roadways or parking surfaces (6).

Photo 3

Natural Landscaping

Natural landscaping means using native vegetation for lawns and other developed sites. Natural landscaping is an affordable and environmentally friendly alternative to traditional turf grass and ornamental plantings. In addition to preventing stormwater runoff, native vegetation requires less maintenance, prevents erosion and provides habitat for native wildlife (7).

Bioretention Cells (Rain Gardens)

Bioretention cells, also referred to as rain gardens, are small landscaped, graded areas that are constructed with a special soil mix that can absorb and filter runoff. Low maintenance, water-tolerant plants are often used in these bioretention cells. These landscaping elements aid in reducing stormwater runoff, replenishing the aquifer, and filtering non-point source pollution (6).

Photo 4

Naturalized Detention Basins

Conventional detention basins are designed to prevent flooding by temporarily storing stormwater runoff and releasing it gradually to the downstream drainage system. Naturalized detention basins also provide flood prevention, but also have other benefits. They serve a similar purpose as natural lakes or wetlands. They are designed to emulate natural lakes or wetlands using native plants along the water's edge and on side slopes. The design generally incorporates flat slopes at the edge of the water or wetland, shallow zones of emergent vegetation at the edge of wet basins, and a combination of vegetated and open water areas in wetland basins. Because naturalized detention basins have vegetation incorporated, they serve to remove pollutants from stormwater and provide wildlife habitat (7).

Photo 5

Other recommendations for developed areas:

- Cluster development to maximize paved areas
- Use minimum width streets
- Direct runoff from pavement to vegetative lined channels

3. Follow NYS Guidelines for New Construction Sites

The following recommendations are under the New York State Guidelines for Construction Activities (4).

- Minimize the area of exposed soil on site
  - Plan the project in stages to minimize the amount of area that is bare and subject to erosion
  - Seed disturbed areas with permanent or temporary groundcover
- Protect defined channels with erosion and sediment control practices (ESC)
  - Use stabilization measures such as sod, geotextile, natural fiber or riprap to allow channels to carry water without causing erosion
  - Use softer measures like geotextile or vegetation where possible to prevent downstream impacts.
- Reduce the velocity of stormwater flow
  - Use ESC practices such as vegetated buffers and check dams to slow down stormwater as it travels across and away from the project site.
  - Don't use silt fences or other types of perimeter filters; never install them in streams or ditches
- Keep sediment on site
  - Maintain a minimum 50 ft length of clean stone at access points to accommodate large vehicles.
  - Sweep the construction entrance road often to prevent soil and debris from entering storm drains
  - Do not hose paved areas
  - Use temporary sediment traps and basins to retain sediment
- Maintain all ESC practices to ensure their effectiveness during the life of the project
  - Regularly remove collected sediment from silt fences, berms, traps and other practices
  - Maintain sediment controls that protect sensitive areas such as diversion structures and silt fences
  - Keep geotextiles and mulch in place until vegetation is well established

Resources for Sustainable Stormwater Management

Stormwater Authority, LLC
A comprehensive website featuring information on stormwater management techniques, best management practices, regulations, funding, and engineers and contractors.
P.O. Box 305□

Wilmot, New Hampshire 03287
1-800-729-0604
http://www.stormwaterauthority.org/default.aspx

Stormwater Management at EPA Headquarters
The EPA Headquarters in Washington DC is the site of a stormwater management demonstration project. The site demonstrates many techniques to reduce stormwater runoff and sustainable design.
http://www.epa.gov/owow/nps/lid/stormwater_hq/
Contact: LIDHQ@epa.gov

EPA's Section 319 Nonpoint Source Success Stories
This page features projects receiving grant funds from the section 319 program that have achieved documented water quality improvements through best management practices.
http://www.epa.gov/greeningepa/relpro/index.htm#water

SUNY ESF Stormwater Management Program
Provides courses and training sessions for stormwater management.
SUNY ESF Outreach Office
Syracuse, NY
315-470-6817
http://www.esf.edu/outreach/stormwater/

The Stormwater Center
This site is designed specifically for stormwater engineers and managers, local government officials, and others needing technical assistance on stormwater management issues.
http://www.stormwatercenter.net/

National Menu of Stormwater Best Management Practices
Information from the US EPA on best management practices, public education programs and case studies.
http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm

Resources on Green Roofs:

Green Roofs for Healthy Cities
Green Roofs for Healthy Cities is a small network consisting of public and private organizations dedicated to increasing awareness of the economic, social and environmental benefits of green roofs. The website has many great resources on green roofs.
406 King Street East
Toronto, ON
M5A 1L4
Canada
416-971-4494

http://www.greenroofs.net/index.php?option=com_frontpage&Itemid=1

US EPA
Provides case studies and information on various different types of green roofs
http://www.epa.gov/hiri/strategies/greenroofs.html

Resources for Public Education
The following are some useful resources for educating citizens about what they can do to reduce stormwater runoff.

After the Storm: A Citizen's Guide to Understanding Stormwater. A 11" x 17" quarter folded brochure for color printing on a medium to heavy weight paper. The brochure includes an overview of stormwater runoff, effects of pollution, and guidelines for homeowners, commercial, construction, agriculture, forestry, and automotive facilities. This publication is produced by the USEPA and is customizable. The back cover provides ample space for adding local contact information. Printed copies can be ordered from EPA or a pdf format can be accessed at:
(http://www.epa.gov/npdes/pubs/after_the_storm.pdf).

Make Your Home the Solution to Stormwater Pollution: A Homeowner's Guide to Healthy Habits for Clean Water. A 5.5" x 17" tri-folded brochure for color printing on cardstock. The brochure includes a brief overview of stormwater runoff and bulleted lists of things that homeowner's can do to reduce non-point source pollution in their vehicle and garage, lawn and garden, home repair and improvement, pet care, swimming pool and spa, and septic system use and maintenance. This publication is produced by the USEPA. Printed copies can be ordered from EPA or is available in pdf format from the EPA website (http://www.epa.gov/npdes/pubs/solution_to_pollution.pdf).

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5) Stormwater Information. Retrieved March 25, 2008, from NYS Department of Environmental Conservation Web site: http://www.dec.ny.gov/chemical/8468.html

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Sewage Treatment Plant

What does a sewage treatment plant do?

A sewage treatment plant uses physical, chemical and biological processes to remove contaminants from wastewater or storm runoff water. The purpose is to produce a waste stream and sludge clean enough to discharge back into the environment. (Wikipedia, 2008)

Why does Sacket's Harbor need a new sewage treatment plant?

The Sackets Harbor 2007 Local Waterfront Revitalization and Heritage Area Management Plan includes the following reasons to relocate and build a new plant.

- The municipal sewage treatment facility located on Hill Street serves the Village core area and Madison Barracks. Areas not served include residences and cottages at Gilmore Shores on Ontario Street and lands generally south and southwest of the Village core. Located to the south of the Battlefield State Historic Site, the sewage treatment plant has a secondary treatment plant that discharges into Black River Bay offshore from Ontario Street.
- Each year that heavy spring rains coincide with March thaws, the plant's capacity is reached or exceeded for a short period (up to a week) due to a high ration of infiltration in the Village's sewer system.
- The Village should explore a new location for the sewage treatment plant that is farther removed from significant historic and natural resources, as well as residential areas, such as the eastern portion of the former oil facility lands.
- There also exists a transfer station at Market Square Park. The use of this facility is currently being evaluated. The removal of this transfer station would improve visibility of the harbor and the overall aesthetics of Market Square Park.

What are some other reasons to invest in a new facility?

- Outdated sewage treatment plants are expensive in terms of energy consumption.
- Newer, more innovative methods should be investigated, such as constructed wetlands, or anaerobic digestors.
- Some facilities can even produce enough energy to run themselves plus supply electricity to the town, through the production of biogas or constructing a wind/solar powered power plant on-site. (City island wastewater treatment plant.2006)

What are some 'newer, more innovative' systems?

- Anaerobic Digestors:

Anaerobic digestion is a bacterial process that is carried out in the absence of oxygen. One major feature of anaerobic digestion is the production of biogas, (California Energy Commission, 2006)which is produced from organic wastes such as livestock manure, agricultural residues, food processing waste, and municipal wastewater. (Gray, Suto, & Chien, 2008) Biogas can then be used in generators for electricity production and/or in boilers for heating purposes. One advantage is less odor emitted from the sludge, as the volatile compounds are removed. (Henry & Koelsch, 1976) Another advantage is storing energy with fuel cells for use on-site. (Rickerson & Cohan, 2007)

- Constructed Wetlands:

Constructed wetlands include engineered reedbeds and a range of similar methodologies, all of which provide a high degree of aerobic biological improvement and can often be used instead of secondary treatment for small communities. (Wikipedia, 2008)

- Eco Machines:

Invented by John Todd, an integrated system that generates fuels, grows foods, repairs damaged environments, regulates climates in buildings and treats waste. (John Todd Ecological Design, Inc., 2007b)

Where have these technologies been used?

Anaerobic Digestors:

- University of California, Davis (Onsite Power Systems, Inc., 2006)
- The Cities of Gloversville and Johnstown, Fulton county NY (NYSERDA, 2007a)
- North Tonawanda
- Auburn, NY (Rapp, 2008)

Eco Machines:

- Arcata, California (Levy, 2007)
- Interstate 89 Rest Stop, Sharon, VT(John Todd Ecological Design, Inc., 2007a)
- Darrow School, New Lebanon, NY
- Oberlin College, Oberlin, Ohio
- Berea College, Berea, Kentucky
- Omega Institute, Rhinebeck, NY 19

Alternative Energy:

Wind/Solar Power:

- Jersey-Atlantic Wind Farm in Atlantic City, NJ (City island wastewater treatment plant.2006)

Fuel Cell:

- Yonkers Joint Wastewater Treatment Plant in Westchester County, NY (Rickerson & Cohan, 2007)

- South Treatment Plant, Renton, Washington (Rickerson & Cohan, 2007)

Biogas fuel:

- University of California, Davis (Onsite Power Systems, Inc., 2006)
- City of Auburn, NY (Staff Writer, 2008)

SubSurface Constructed Wetlands:

- The Village of Minoa (just east of Syracuse) has been using SubSurface constructed wetlands for over ten years**.** The sewage, from various point and non-point sources is pumped to a Primary Claryfier were solids and floatables are settled out. Next, the Wastewater is gravity fed through PVC pipe. The PVC pipe is preferred for that it has a propensity to allow substances to flow more quickly to the wetlands.

  The process is expedient and with minimal cost. The only pipes in the system run from the holding tank and between constructed wetlands cells. Minoa has three cells, 1& 2 for carbon removal (**BOD5**) and the third for Nitrification and denitrification. The Minoa wetlands also have the ability to remove Phosphorous without the use of chemicals below 1 mg/L. The wetlands at Minoa are processing 130,000 gallons of sewage per day with a detention time of 1.2 days. "It's similar to installing a pool," is how Minoa's WWTF supervisor, Steve Giarrusso described how to create such wetlands.

  This technology takes advantage of water's tendency to flow from a high point to a low point and the filtering capabilities of small 2-3 inch rocks. The cells are aerated without the use of electricity or mechanical means. This unique design not only uses anaerobic bacteria; it also utilizes the benefits of aerobic bacteria. This is how Minoa has been able to reach its goal of 99% removal**.**

  For further information about this project, or to have help in establishing a plan for Sacket's Harbor, call Steve Giarrusso- Minoa's Waste Water Treatment Facility Research Biologist, Chief Operator**.** Home phone: 315-656-3576 Cell phone: 315-952-9945

Can the sewage sludge be used?

The majority of US sewage sludges, a by-product of wastewater treatment, are applied to land. There are risks and benefits associated with the nutrients, organic matter, chemical contaminants and pathogens they contain. (Cornell University, College of Agriculture and Life Sciences, 2007)

What are the regulations for the use of sludge?

Land application of sludges is regulated under state (Part 340 of NYS DEC regulations) and federal (Part 503) regulations. Municipalities in NYS may also adopt local rules. Where different, the most stringent of the federal, state, or local rules must be followed. (Cornell Waste Management Institute, 2006)

Is funding available for municipalities?

NYSERDA:

- Anaerobic Digester Gas-to-Electricity Program (NYSERDA, 2007b)
  Program Opportunity Notice (PON) 1146
  Total Program Funding up to $11 million 10

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Recreation Center

A recreation center within a community can provide many opportunities for the townspeople. Sacket's Harbor is no exception to this; a indoor pool in particular can provide recreation opportunities for the whole community.

There are many possible ways for Sacket's Harbor to implement *green* ideas into the construction of a new recreation facility. *Green Design,* as it is often referred to, should be kept in mind, not only with the construction of the site, but also the maintenance and energy supply of the site. Here are some broad ideas of ways that the village of Sacket's Harbor can *Go Green* with their community center:

The village specifically indicated that their first priority would be an indoor swimming pool facility. Even an indoor pool can be constructed in an environmentally friendly manner. This is true both with regard to the products used to construct it and the energy use of the site. Solar panels on the roof of the facility may help towards the heating of the pool.

It is common, when a new building is being constructed in an environmentally sound manner to follow the LEED (Leadership in Energy and Environmental Design) standards. The LEED program and it's rating system, the Green Building Rating System are a voluntary, consensus-based national standard for developing high-performance, sustainable buildings. It is administered by the U.S. Green Building Council. LEED provides a complete framework for assessing building performance and meeting sustainability goals by emphasizing state-of-the-art strategies for:

- sustainable site development
- water savings
- energy efficiency
- materials selection
- indoor environmental quality

The LEED system has some particular goals in mind which are to:

1) Reduce the amount of landfill waste generated by the renovation;
2) Reduce the consumption of natural resources used in renovating and operating the center; and
3) Improve the efficiency of the center's heating, ventilation, and air conditioning systems.

Methods for Sackets Harbor to Apply Being *Green* To Their New Recreation Facility:

Green Pool Supplies/ And Other Eco-Friendly Products

- Use recycled products
- Use of locally produced materials to construct the building
- Choice of carpet and other materials to emit low levels of volatile organic compounds.
- Explore what eco-friendly products are available to care for regular pool maintenance.

Solar Pool Heater/ Solar Paneled Roof

- Investing in a solar heating system is a great way to be environmentally friendly.
- How Much Does A Solar Pool Cost?
    - Once your solar pool heater is installed, there are no operating costs - the sun's rays are free!
        - For more info on Solar Pool Heating, visit WarmWater.com
- Solar panels to pre-heat the water for the center's swimming pools, and for domestic hot water use
        - Water is pumped through the solar unit to bring it closer to the desired temperature before being heated by boilers, reducing natural gas consumption by an estimated 50 percent.
        - Install a carbon dioxide monitoring system that adjusts the amount of ventilation air to match the number of people using the facility
        - During off-peak hours, when building use is light, the system reduces outside air intake
- The project could incorporate day lighting techniques to reduce electricity needs.
        - Dimmers and occupancy sensors are employed
        - Low-energy lighting fixtures
        - Double-paned, low-E insulating glass is used to reduce the amount of solar radiation filtering in through windows, thus lowering air conditioning requirements.
        - The windows are engineered specifically for their location in the building

Here are some more detailed methods for constructing a sustainable indoor pool for the community of Sacket's Harbor:

7 Essential Steps to a Sustainable Indoor Pool Environment (Taken from Air2Energy)

1. Construct an energy efficient building:

    a. Highly insulated ceiling, walls and floors (no cold spots),
    b. NO SINGLE GLASS - Use only double glazed windows and thermally insulated frames (no metal frames unless thermally protected/broken)
    c. Tight and sealed building envelope.

2. Wet Area finishing:

    a. Ex. blue-board or cement sheet walls and ceilings, corrosive resistant finishes, etc.

3. Heat the air as well as the water. Air temperature need not be higher than water temperature if area is properly ventilated.
4. Ventilate Sustainably with a Venmar Heat Recovery Ventilation & Air Filtration System:

    a. Low energy use,
    b. Removes moist indoor air and corrosives (chlorine gas and salts),
    c. Recovers up to 80% of heat from pool room and uses this to pre-heat incoming fresh air,
    d. And returns condensate to the pool.

        i. By using a Venmar Heat Recovery Ventilator (HRV), humidity and all other problems and discomfort associated with it are eliminated. The added bonus of the HRV compared to conventional dehumidification is that fresh air is constantly being brought into the building.

5. Use a Pool Blanket when pool is not in use (reduces evaporation by 30%).
6. Surface-mounted lighting - to prevent any 'break' in wall or ceiling (moisture can penetrate and/or insulation coverage may be compromised).
7. Monitor conditions - indoor and outdoor air temperature, indoor humidity and water temperature.

(http://www.freepoolquotes.com/article_Solar_Pool_Heating_Solar_Pool_Heaters.asp)

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Education and Tourism

How does education relate to a "green" Sacket's Harbor?

As you may well know, education doesn't stop at the doors of the local schools. Education and tourism very often go hand-in-hand; Sacket's Harbor has already exploited this fact with their many attractions, including multiple museums and the Seaway Trail Discovery Center. As a historic area, Sacket's Harbor is brimming with fun and interesting educational opportunities for both its citizens and visitors. Incorporating green energy-saving technologies into the buildings that house these businesses and organizations is a great way for Sacket's Harbor to showcase their sustainability initiatives and inform visitors and citizens about the push for sustainability as it relates to the village.

How can Sacket's Harbor promote "green" tourism?

This is actually much more feasible than it may seem. Many of the recreational activities that people enjoy when they visit Sacket's Harbor are already green. Kyaking, canoeing, sailing, bicycling, and window-shopping are all examples of green tourist activities that visitors already engage in. Other activities related with tourism aren't as environmentally friendly, however, and things such as car-tours, motorboating, jet-skiing, and other fossil-fuel dependent activities can harm the local environment and tourist appeal by negatively impacting fisheries and aquatic ecosystems (petroleum-based pollution) and producing unwanted noise, smell, or wake.

Education

The entire sustainability initiative is a spectacular opportunity to educate. Naturally, when faced with such a change, people ask why. While there is no shortage of information for "why," it isn't exactly fun to have to sit through hours of lecture to understand the answers. It is, however, entirely feasible for Sacket's Harbor to initiate an interpretive signage program that showcases and celebrates the actions that the village is taking on this critical issue.

Given that Sacket's Harbor is a very walkable village, and assuming that some of the recommendations given in this guide are followed, visitors on bicycles and on foot will be commonplace and moving slowly enough to be able to stop and read and learn from signage installed throughout the village. If a historic building has had geothermal heating or solar power installed on the property, why not include a sign to explain why this is appropriate? Low-profile solar and geothermal systems are available that would not impact the aesthetic value of the building (they could easily be constructed a short distance from the structure) and might not even be very visible if installed with that consideration in mind. Signage could help showcase the fact that such old buildings can benefit from new technology that reduces its impact on the environment, and could easily celebrate the convergence of traditional and historic with new and sustainable. Without signs to point out, interpret and celebrate these things, they can easily go unnoticed or underappreciated, and neither result is desirable or deserved.

The Schools

Again, nearly all of Sacket's Harbor's green renovations are spectacular opportunities for the school-aged citizens of Sacket's Harbor to learn about the environment, science, and technology. In fact, green actions such as those discussed in this guide can relate to every educational subject from history to society and sociology. The trail system being

proposed is another perfect opportunity to educate the young and mature of the Sacket's Harbor community about the environment, wildlife, science, technology, and the rest of the whole gamut of relevant subjects. Other communities have constructed trail systems expressly as "science trails" which are then incorporated into school programming. It's a widely acknowledged fact that children of all ages and backgrounds learn better when they are outside experiencing the reality of what they are learning rather than in a classroom using traditional methods. It would be a tragedy for these proposed green renovations to go unutilized as educational and social opportunities for learning, both for study and community.

We recommend that the village of Sacket's Harbor continue to include and involve their school and educational programs and students in the conceptualizing, planning, construction and use of proposed projects such as science or nature trails, bike trails, interpretive/information kiosks, etc. Maintaining and/or improving on these assets can be incorporated into learning, assignments, or projects for students. In this way, the village gives the gift of inclusion and some degree of ownership and responsibility to these community resources and opportunities, and it is a fantastic gift to give. So long as people respect the communal nature of these things, advocating ownership and responsibility of these projects or areas leads to a number of positive effects. Those who are involved in these sorts of renovations and opportunities really develop affection toward them, and the village will find that it soon has stewards to help look after and speak up for them. There is also the incidental learning that will happen even if an activity isn't intended as educational, which ultimately leads those who have been involved to a greater appreciation for and knowledge of the project or action.

Tourism

As already mentioned, Sacket's Harbor already depends upon educational activities that contribute to tourism in the village (like the Seaway Trail Discovery Center and Pickering: Beach Museum). We recommend that the village pushes this investment further by installing interpretive signs, panels, or kiosks in and around the village, explaining the history and perhaps green technology of various buildings and sites. There are abundant opportunities to inform visitors about the natural history of the area as well, especially with regards to the proposed trail system.

Imagine an entirely quiet, peaceful summer without the constant drone of jet-ski motors and speedboat engines rumbling across the water and floating into people's campsites, homes, streets, and businesses. While these activities attract significant numbers of seasonal visitors, Sacket's Harbor should make efforts to send the message that these activities are not environmentally responsible and do not contribute positively to the intended "historic" and "green" atmosphere of the village. Sacket's Harbor can likely produce significant revenue by adding a (moderate) village tax to the fuel or docking cost of noise and chemical polluters such as jet-ski riders and speedboat operators, which will also serve the purpose of raising awareness regarding the issues of aquatic habitat conservation, oil-based pollution (spilled gas and oil are a serious problem in the lakes and watersheds of the region), and noise pollution.

As alternatives, Sacket's Harbor could promote kayaking, canoeing, paddle-boating, sailing, and other carbon-neutral activities by inviting entrepreneurs to the village to set up boat rental businesses, or providing for village-owned rentals through the Visitor's Center. Opposed to the draw of "going fast" just for kicks, these activities invite

participants to experience the shoreline and beauty-on-the-water of Sacket's Harbor, and are another fantastic opportunity to implement interpretive programming, to add substance to the experience of visitors and residents alike. Employing an aquatic ecosystems/fisheries (Great Lakes) specialized teacher-naturalist to lead human-powered boat tours and hikes would be a strong first step towards realizing the vision of truly "green tourism." Likewise, touring the village and historic sites by car is as equally problematic as motorboating activities. While much more commonplace (and therefore often seen as "more acceptable"), cars are a major source of the pollutants that contribute to global warming, acid rain, and poor air quality.

Therefore, just as we recommend that Sacket's Harbor have available non-motorized boat rental services, it would be perhaps more desireable if the village were to provide for bike rentals for visitors. While it is a fact that previous bike rental attempts have fallen through, it may have been a result of poor timing. If traffic slowing methods, interpretive signs and trails, and careful planning of future development are all achieved, it should make more sense (and be far more pleasurable) to tour Sacket's Harbor by bicycle or on foot rather than by car or bus. Additionally, disabled and limited-mobility visitors should not be disregarded, and a biodiesel-powered tour bus or van that is operated by the village (perhaps the proposed village-transit vehicle could also run tours at certain times) is a fantastic idea that should be aggressively pursued.

Directory Listings:

ESF Outreach
A Better World Through Environmental Discovery

ESF Outreach works with ESF faculty, K-12 schools, colleges and universities, and public and private organizations to provide educational and professional development programs. Whether you are an environmental or natural resource professional, a K-12 student or educator, or a member of the community, we invite you to discover ESF's outreach opportunities:

- Professional Development conferences, workshops and certificates
- Credit courses and professional development programs for K-12 Students and Teachers
- Credit courses for non-degree students

Contact: ESF Outreach *http://web.esf.edu/oweb/*
221 Marshall Hall
SUNY-ESF
1 Forestry Drive
Syracuse, NY 13210
315-470-6817
315-470-6890 (fax)
outreach@esf.edu

Cornell Cooperative Extension *http://www.cce.cornell.edu/* and CCE NYS 4H Youth Development *http://nys4h.cce.cornell.edu/*

"Enables people to improve their lives and communities through partnerships that put experience and knowledge to work"

Jefferson County Cornell Cooperative Extension
203 North Hamilton Street
Watertown, NY 13601
Phone: 315-788-8450
Fax: 315-788-8461

Minna Anthony Common Nature Center—Jefferson County

NYS Office of Parks, Recreation & Historic Preservation
Wellesley Island State Park
44927 Cross Island Road
Fineview, NY 13640-3700
315-482-2479
http://www.nysparks.state.ny.us/parks/info.asp?parkId=184

Bordered by the St. Lawrence River shoreline, the museum and 600-acre wildlife sanctuary are dedicated to conserving natural resources, promoting environmental awareness, and providing recreational programs. Among the many exhibits featured at the Nature Center Museum are live collections of fish, reptiles, and amphibians; mounted waterfowl and birds of prey; decoys, geological specimens, and wildflowers. Eight miles of trails and walkways provide opportunities for hiking, snowshoeing and cross-country skiing (rentals are available). The Minna Anthony Common Nature Center is the largest state park Nature Center and the largest in the north country. It is located within the 2600 acre Wellesley Island State Park which is the largest undeveloped parcel of land in the Thousand Islands.

New York Sea Grant Extension *http://www.nysgextension.org/*

New York Sea Grant
Cornell University
340 Roberts Hall
Ithaca, NY 14538-5905
Phone: 607.255.2832
Fax: 607.255.2812
office email: SGIthaca@cornell.edu

A state and federally-funded program providing science-based information to people making and influencing decisions for the wise development, management and use of our coastal resources - now and in the future.

Coastal Areas

I. Coastal Areas are unique and diverse systems that provide a vast array of ecological services to humans and to wildlife. They valued as important places for recreation, transportation, education, source of food and commercial use. Coastal systems can be defined as "areas where land and water join to create an environment with a distinct structure, diversity, and flow of energy. They include salt marshes, mangroves, wetlands, estuaries, and bays and are home to many different types of plants and animals." [7] These ecosystems provide numerous services (See Figure 1). Coastal areas have regulating functions such as providing a buffer zone, acting as a flood plain. These areas also offer provisioning services such as food and water to humans and wildlife. Coastal areas have aesthetic and cultural benefits as well; they provide recreational areas/open spaces, and education or interpretive opportunities. One service that is less obvious is the way that the coastal areas support biological life through nutrient and energy cycling.

II. Humans are instinctively drawn to the coast, more than half the world's population lives within 100 km (60 miles) of a coastline - this is more than 2.7 billion people. The high population density puts considerable pressure on the coastline ecosystem. [8] One effective way to maintain and protect wetlands is to build and preserve an undisturbed vegetative upland barrier around the wetland. This riparian habitat will buffer impacts on the wetland as well as serve as an important habitat for a variety of wildlife. The wetland can also serve as a floodplain and reduce or eliminate flooding caused by spring melts or severe thunderstorms. It is also a highly utilized by migratory birds. Another way is to minimize human impact. Ask visitors to stay on designated trails and pathways and build a pedestrian-friendly environment to encourage people to walk rather than use vehicles while visiting the waterfront. It is also helpful to get the public involved, increase stewardship, re-plant native vegetation and re-build wildlife habitat. It is imperative to protect and enforce water quality standards, minimize pollution.

Figure 1. Type of Ecosystem Services

Types of Ecosystem Services
Provisioning are those that provide goods such as food and water
Regulating are those that control various processes, such as flood control or suppression of disease outbreaks
Supporting such as nutrient cycling, maintain material and energy balances
Cultural are those that provide spiritual, moral and aethestic benefits.

Limburg, K.E. 2008

III. Ways to Protect Coastal Areas

Coastal Management policies are a power tool for protection. As described above, policies can dictate land use and development. Listed below is a list of environmentally conscious policies developed by the Village of Sackets Harbor.

Table 3-1 Summary of Sackets Harbor Coastal Management Policies

Table 3-1. Summary of Sackets Harbor Coastal Management Policies

DEVELOPED COAST POLICIES	
Policy 1	Foster a pattern of development within the Village of Sackets Harbor that enhances community character, preserves open space, makes efficient use of infrastructure, makes beneficial use of a coastal location, and minimizes adverse effects of development, in accordance with Heritage Area goals and principles.
Policy 2	Preserve historic and archaeological resources.
Policy 3	Enhance visual quality and protect outstanding scenic resources throughout the community.
NATURAL COAST POLICIES	
Policy 4	Minimize loss of life, structures, and natural resources from flooding and erosion.
Policy 5	Protect and improve water resources.
Policy 6	Protect and restore ecological resources, including significant fish and wildlife habitats, wetlands, and rare ecological communities.
Policy 7	Protect and improve air quality.
Policy 8	Minimize environmental degradation from solid waste and hazardous substances and wastes.
PUBLIC COAST POLICY	
Policy 9	Improve public access to and recreational use of public lands and waters.
WORKING COAST POLICIES	
Policy 10	Protect water-dependent uses, promote siting of new water-dependent uses in suitable locations, and support efficient harbor operation.
Policy 11	Promote sustainable use of fish and wildlife resources.
Policy 12	Protect the agricultural lands.
Policy 13	Promote appropriate use and development of energy and mineral resources.

Specific Policies for the Village of Sackets Harbor

• Utilize the State Environmental Quality Review Act (SEQRA) process to its fullest extent in the review of projects under Village jurisdiction. SEQRA provides an important means whereby the local community can assess all potential significant environmental impacts of a proposed development.
Local, state, and federal review of major actions proposed should take into account the economic, social, and environmental interests of Village residents.

• Locate future development where public infrastructure capacity exists, where existing facilities can adequately handle the development, or where private facilities could be developed in such a way that community character, environmental quality, open space, agricultural lands, and natural resources are preserved and water-dependent uses are not displaced.

• Avoid the introduction of discordant features, which would detract from the community. Compare the proposed development with existing distribution of structures, scale, intensity of use, architectural style, land use pattern, or other indicators of community character.

• Preserve undeveloped/open space areas by avoiding adverse impacts among existing incompatible uses by avoiding expansion of conflicting uses, promoting mixed-use development approaches which would reduce the potential for conflict, segregating incompatible uses, and providing buffers or other design measures to reduce conflict between incompatible uses.

• Utilize all available planning review, analysis, and mitigation tools for storm water management, nonpoint source pollution, etc. and others.

• Protect the surrounding community from adverse impacts due to substantial introductions of or increase in odors, noise, or traffic.

• Preserve viewsheds to the maximum extent possible.
Section 3.0 – Coastal Management Policies March 2007 - DRAFT
Village of Sackets Harbor LWRP/HAMP/HMP Section 3.0 – 10

Here is a list of specific New York State Policies:
• Enhance and draw attention to the natural and historic importance of the Village.
• Strengthen the economic viability of the traditional Main Street area.
• Develop related recreational opportunities at the waterfront and surrounding Village areas to encourage movement between the two areas.
• Encourage land uses appropriate to the Village core areas, including mixed commercial and recreational uses.
• Match land uses to local and regional community needs to avoid unnecessary duplication and to preserve community character.
• Accommodate new waterfront uses in an orderly manner and foster safe, convenient waterfront access at strategic locations, linked by streets, sidewalks, and other modes of access.
• Increase educational and interpretive use of the areas within the Village.

The coastal zone of Sackets Harbor serves a vital ecological role in the community and has the potential to serve as a recreational area in the future. For these reasons, it is important to maintain the health of the coastal area.

There are several options that the community can take advantage of to protect its current coastal resources. These options include:

- A stewardship program;
- Zoning regulations; and
- Open space preservation

Stewardship Programs
New York Sea Grant in partnership with the New York State Department of Environmental Conservation, New York State Parks, and The Nature Conservancy has developed a stewardship program for the Salmon River region and the sand dunes of Eastern Lake Ontario. "The stewards are goodwill ambassadors at these sites and promote environmentally sound recreational use and stewardship of New York's natural resources through public education" [4]

Sackets Harbor could utilize a stewardship program to help maintain the health of the coastal areas; specifically the future public beach. The stewards could ensure the proper use of the area, and conduct shoreline/beach cleanup programs. If the wetland area is created as shown in the drawings for the draft Coastal Management section of the Local Waterfront Revitalization Program, Heritage Area Management Program and the Harbor Management Plan, the steward could guide tours through the area and educate the public about the various qualities of the wetland.

"The stewards are the first line of communication, talking with people about the importance of maintaining strong habitats not only for rare and endangered species, but for the everyday plants and wildlife that are vital to ecosystem biodiversity."[5] In this way, the stewards could help promote the environmentally sound use of recreation areas such as the future public beach.

Zoning Regulations

New York State has delegated to local governments, the authority to create and adopt zoning laws. "These laws divide land within a municipality into zones, or districts, and prescribe the land uses and the intensity of development allowed within each district"[1]; giving the municipality the ability to determine its future growth patterns.

Policy 1.2 of the Coastal Management section of the draft Local Waterfront Revitalization Program, Heritage Area Management Program and the Harbor Management Plan states that "Simply allowing market forces to determine the future, long-term use of this valuable resource does not ensure an attractive or a publicly accessible waterfront"[2]. By creating or using existing zoning regulations, Sackets Harbor can protect coastal areas and allow for recreation in those areas where applicable.

"A local waterfront management plan regulates land uses in a waterfront area and sets forth the policy objectives and implementation procedures for development in that section of a municipality" [1]. In the case of Sackets Harbor, the draft Coastal Management section of the Local Waterfront Revitalization Program, Heritage Area Management Program and the Harbor Management Plan can be used as the local waterfront management plan. Incorporating the ideas laid out in this plan into zoning can help ensure proper management and maintenance of the coastal areas of Sackets Harbor.

An example of using zoning to carry out the goals of a local waterfront management plan is the village of Tivoli in northern Dutchess County which "…established a land conservation district that borders the Hudson River and other major watercourses that flow through the village. No as-of-right uses are permitted in these districts, and only agriculture, wildlife preserves, outdoor recreation facilities, parks and playgrounds may be established by special permit" [1]

Open Space Preservation

According the International Union for the Conservation of Nature (IUCN) there are 4 main functions of the open space which include:

- Regulation of natural processes;
- Provide habitat for flora and fauna;
- Means of production; and
- Provide opportunities for reflection, enrichment, and recreation. [Open Space Class, Smardon ppt]

According to the drawings for the draft Coastal Management section of the Local Waterfront Revitalization Program, Heritage Area Management Program and the Harbor

Management Plan; there is the potential to have a public beach with wetland areas and a boardwalk trail. This area could serve three out of the four functions of open space: regulation of natural processes, provide habitat, and allow for opportunities of reflection and enrichment/education.

Using existing or creating new zoning regulations to define this area as open space will help ensure its long-term preservation. This can also be achieved by using a conservation easement to restrict the type and amount of development that may occur on a particular parcel [3]. Both of these actions, taken together or alone, would help to preserve the open space and allow for certain uses. In the case of Sackets Harbor's potential public beach zoning regulations and/or a conservation easement can help to protect the beach area and allow for activities common in beach settings. Overall, this would help preserve open space for the community's use.

Resources:

New York Sea Grant
A cooperative program of the State University of New York (SUNY) and Cornell University which promotes the wise use of coastal resources through research and outreach projects.
62B Mackin Hall
SUNY College at Oswego
Oswego, NY 13126-3599
SGOswego@cornell.edu
http://www.seagrant.sunysb.edu/default.htm

UNEP
Offers a description of recent efforts and policies regarding Coastal Zone Management as well as integrated coastal zone management and funding possibilities under coastal zone management award.
NEP DTIE
Tourism Programme
15 rue de Milan
75441 Paris Cedex 09
FRANCE
E-MAIL: tourism@unep.fr
http://www.uneptie.org/pc/tourism/sensitive/coastal.htm

Coastal America
"Coastal America is a partnership of federal agencies, the military, various corporations, and marine education centers across the U.S. in an effort to educate and involve the public in protecting the nation's coastal and ocean ecosystems."
300 7th Street, SW Suite 680 • Washington, DC 20250
William.Nuckols@usda.gov
http://www.coastalamerica.gov/

The Environmental Literacy Council

The ELC is an organization that compiles resources that are pertinent to environmental topics.
Telephone: (202) 296-0390
1625 K Street, NW, Suite 1020 Washington, DC 20006-3868
info@enviroliteracy.org
http://www.enviroliteracy.org/subcategory.php/9.html

Sources:

1) Nolon, John R. (2001). *Well Grounded: Using Local Land Use Authority to Achieve Smart Growth.* Location: Environmental Law Institute.
2) Village of Sackets Harbor, Environmental Design & Research, and New York State Department of State. (2007). *Local Waterfront Revitalization Program, Heritage Area Management Program and the Harbor Management Plan.* Sackets Harbor, New York: Village of Sackets Harbor.
3) Diehl, Janet and T.S. Barrett. (1988). *The Conservation Easement Handbook; Managing Land Conservation and Historic Preservation Easement Programs*. Washington, D.C.: Land Trust Alliance.
4) New York Sea Grant. (2007). *Graduate & Undergraduate Recource/Recreation Management Opportunities: Salmon River Steward Summary of Position.* Stony Brook, New York: Sea Grant New York.
5) New York Sea Grant. (2007). *Eastern Lake Ontario Dune Steward Program; Resource Appreciation through Public Education*. Stony Brook, New York: Sea Grant New York.
6) Limburg, K.E. (2008) *Aquatic Ecosystem Services* State University of New York, Syracuse, NY, USA Elevier Inc.
7) Coastal Areas. (2008) In *Environmental Literacy Council*. Retrieved April 4, 2008 from Environmental Literacy Council homepage. Online: http://www.enviroliteracy.org/subcategory.php/9.html
8) Coastal Area Management. (1999) In *Coastal Area Management: The Need for a Continuum of Actors and Actions.* Retrieved April 4, 2008 from The Global Development Research Center. Online: http://www.gdrc.org/oceans/cam-continuum.html

Brownfields

What is a brownfield?

As defined by the US Environmental Protection Agency, "Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment." (US EPA 2008)

What do brownfields have to do with Sacket's Harbor?

Sacket's Harbor has a tremendous opportunity to redevelop the area that used to be occupied by an oil facility; this parcel of land, referred to as the "Augsbury Property" in the LWRP, is now held by the Local Development Corporation. Following completion of the evaluation of the site, it will most likely become available for redevelopment.

The "Augsbury Property"—Sacket's Brownfield

The former oil facility provides Sacket's Harbor with a splendid opportunity to expand upon available community resources. Additionally, since this property will likely be redeveloped "from the ground up," it also provides an unparalleled opportunity to incorporate green building practices and renewable energy technologies into any development proposals. Additionally, since the LDC property is a relatively large section of land located near the village core, it has tremendous potential to add to the educational, economic, and social resources of the town and nearby school.

Redeveloping Brownfields

Many brownfield redevelopment projects have already been successful all around the nation. This is due in part to the availability of Federal and State funding for brownfield redevelopment/environmental remediation made available through the strengthening of existing legislation—the Clean Water/Clean Air Bond Act of 1998—that took place in October 2003. Recently, the village of Baldwinsville, NY was awarded the 2002 Platinum Award for Engineering Excellence for the redevelopment of their brownfield, known as "Paper Mill Island." Their project is documented on the DEC website, and an excerpt follows:

"Under the Clean Water/Clean Air Bond Act, the Village of Baldwinsville entered into a State Assistance Contract with DEC in September of 1998 to perform a site investigation and evaluate remedial alternatives for the Paper Mill Island site. As part of the investigation, several interim remedial measures were conducted including removal and proper disposal of drums, old electrical equipment and an underground storage tank.

From the mid-1800s until its abandonment in the late 1980s, this site was used by various

entities including a paper mill, a boat works and a stove manufacturing facility; the result was significant contamination of the land.

The site investigation revealed contamination in surface and subsurface soil by polycyclic aromatic hydrocarbons (PAHs) and metals. PAHs are a group of chemicals that are formed during the incomplete burning of coal, oil, gas, garbage or other organic substances. Mercury and lead contamination was also identified at several locations in both surface and subsurface soil samples.

In 1999, based on findings of the investigation, DEC selected a remedy for the site which included a soil cap, a retaining wall to stabilize the shoreline and control erosion and institutional controls for cap inspection and maintenance. The Village of Baldwinsville was awarded a second grant under the Clean Water/Clean Air Bond Act for design and construction of the remedy and the village also partnered with several private entities to fund infrastructure improvements in conjunction with the remedial program.

In September 2000, a municipal waterfront park and amphitheater was opened on the remediated property, complete with Seneca River boater access. The park now hosts concerts and events from May through September and has become a popular destination for village residents and tourists alike." (NYS DEC 2008)

Redeveloping Augsbury

Given the success of redevelopment programs such as "Paper Mill Island," the potential for the very similar Augsbury property is truly exciting. As the except above mentioned, one of the most common remedies for contaminated property is installing some sort of capping device over the contaminated land. This usually consists of adding several feet of soil to the site, to isolate the contaminants from joining runoff into the watershed and also to facilitate the safe isolation of any vapors that might escape from exposed contaminated soil. If this method is used at the Augsbury property, it will provide an ideal situation in which to install geothermal heating for any proposed development (such as a community center), since the geothermal system needs to be buried. If the developers are already going to be capping with several feet of soil, any geothermal construction might be able to proceed at reduced cost. The work usually associated with installing a geothermal system includes extensive digging; the need for which may be reduced or even eliminated if soil is being added to the property. Most horizontal geothermal systems need 4-6 feet of soil depth; this is therefore an opportunity fully worth exploring. (EERE 2008) (http://www.eere.energy.gov/consumer/your_home/space_heating_cooling/index.cfm/mytopic=12670)

The possibilities for the rest of the Augsbury site are many. Beyond the incorporation of a new "green community center" mentioned above, the Augsbury site offers a fairly large area of land to the village. This land could be redeveloped into a municipal park, surrounding any municipal buildings constructed on the property. This would achieve one of the LWRP goals of preserving green space for the community, and could also provide a great place in which the village could hold large outdoor events such as carnivals,

concerts, village celebrations, outdoor markets, etc. Fitness trails, bike paths, and hiking trails are all ripe possibilities for inclusion in this land use; they would add significantly to the social resources and tourist appeal of the village, and would also provide a safe place with easy access to a main road and the school where townspeople of all ages might gather to relax, meet, or play.

Brownfield Success Stories

Syracuse Center of Excellence in Environmental and Energy Systems

The Syracuse Center for Excellence in Environmental and Energy Systems (CoE) is constructing a new headquarters on a former brownfield. The 60,000-square-foot complex, expected to be completed in 2007, will be located on a 2.4-acre parcel in downtown Syracuse. Previously, the site had been the location of Midtown Plaza, an eight-story building constructed in the early 1900s as a typewriter factory for the Smith Corona Company. The contaminated Midtown Plaza building was demolished in 1999. The mission of the Syracuse CoE is to create innovations in environmental and energy technologies. It focuses on air quality, water quality, "green" buildings, renewable energy and biofuels. The Syracuse CoE is a collaborative effort led by Syracuse University with the SUNY College of Environmental Science and Forestry, SUNY Upstate Medical University, Cornell University, Clarkson University and many other public and private colleges across the state. The headquarters facility will feature additional laboratories to evaluate and showcase new technologies that improve environmental quality and energy efficiency in buildings and urban communities.

Paper Mill Island Park, Baldwinsville, Onondaga County

The Paper Mill Island Park site is surrounded by the Seneca River and the New York State Barge Canal. The site was occupied by a paper mill from the mid-1800s until 1959, followed by numerous industrial/commercial enterprises through the late 1980s, when the property was abandoned. The island was donated to the Village of Baldwinsville, which recognized the potential value of the property as part of a larger waterfront revitalization project. As a result of site investigations, underground tanks and contaminants were removed, a clean soil cap was placed over the entire site, and the shoreline was stabilized to prevent erosion. The park now hosts concerts and events from May through September and has become a popular destination for residents and tourists. The park includes a world-class amphitheater, docks for boaters traveling the New York State Barge Canal, and open space with paved walkways and park benches.

Mitchell Park, Greenport, Suffolk County

Using resources from federal, state and local programs, the Village of Greenport redeveloped a 3.2-acre waterfront parcel that had been contaminated by a marina, shipyard and oystering activities. The village acquired the property in 1996 after the previous owner went bankrupt. Nine underground petroleum tanks were removed along with hundreds of yards of soil contaminated with petroleum and arsenic. Clean soil was

placed over these areas, and the groundwater is monitored to ensure that the cleanup continues to protect people's health and the environment. To develop ideas for future site uses, the village held a design competition that attracted more than 500 submissions from 26 countries. The site now contains a public park, including an amphitheater, historic carousel, harbor walk, seasonal ice rink and splash park.

Stories taken from: http://www.epa.gov/swerosps/bf/success.htm

Directory Listings:

Brownfields and Land Revitalization—US EPA

http://www.epa.gov/swerosps/bf/index.html

As part of its mission to protect human health and the environment, the U.S. EPA is dedicated to revitalizing all types of contaminated land to productive economic and green space use. On this site you can find a variety of information and links about revitalization of other contaminated sites.

NYS DEC—Brownfield Opportunity Areas Program

http://www.dec.ny.gov/chemical/8447.html

Under the Brownfield Opportunity Areas Program, the New York State Department of Environmental Conservation, in partnership with the New York State Department of State, provides financial and technical assistance to municipalities and community-based organizations. Funding can be used to complete revitalization plans and implementation strategies for areas affected by the presence of brownfield sites, as well as site assessments for strategic sites.

Syracuse Center of Excellence

http://www.syracusecoe.org/index.aspx

The Syracuse Center of Excellence in Environmental and Energy Systems (Syracuse CoE) is a federation of more than 200 businesses and institutions that research and develop innovations to improve health, productivity, security, and sustainability in built and urban environments.

Within the federation's three focus areas interests include indoor and outdoor air quality, thermal comfort, improved lighting and sound, water quality, watershed management, and clean and renewable energy.

Architecture

Green Building and Leadership in Energy and Environmental Design (LEED)

Our buildings are at the center of where we live, work, and socialize. As a result, these buildings have a significant impact on our health and the environment. Currently in the U.S., buildings account for approximately 39% of total energy use, 12% of the total water consumption, 68 % of total electricity consumption, 30% of raw materials, 30% of waste output and 38% of the carbon dioxide emissions (5). As the environmental impact of buildings become more apparent, a new field called "green building" has emerged. Green building is a design and construction practice that focuses on creating and using healthier and more resource-efficient models of design, construction, operation, maintenance and removal. There are many environmental, economic and social benefits for adopting green building strategies, and they can be applied to homes, schools, commercial buildings, labs and healthcare facilities. Although green building methods can be applied to a building at any stage of its lifecycle, the most significant benefits are obtained if the design and construction team takes on an integrated approach right from the earliest stages of a building project (3). The U.S. Green Building Council (USGBC) is a non profit organization that certifies sustainable businesses, homes, hospitals, schools and neighborhoods, and is dedicated to expanding green building practices and education. In 1998, the USGBC launched their Leadership in Energy and Environmental Design (LEED) program to provide building owners and operators with the tools they need to have an immediate and measurable impact on their buildings' performance (4).

What is LEED?

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System was developed by the U.S. Green Building Council (USGBC) as a way to encourage the development and implementation of green building practices (1). It is a voluntary, consensus-based national rating system for the design, construction, and operation of high-performance, sustainable buildings. LEED addresses all building types and has specific LEED programs. Based on a whole-building approach, the LEED system evaluates building performance across five main areas: sustainable site development, water savings, energy efficiency, materials and resources selection, and indoor environmental quality. In addition, once projects meet certain prerequisites and performance benchmarks within each category, they are then awarded Silver, Gold, or Platinum certification based upon the number of credits they achieve. To recognize this achievement, a LEED plaque is given, showing that the building is an environmentally responsible, profitable, and healthy place to live and work (6).

Who are LEED Accredited Professionals?

LEED Accredited Professionals (LEED A.P.) are professionals in a specific field who have demonstrated a thorough understanding of green building techniques, the LEED Green Building Rating System, and the certification process. The LEED A.P. program is administered by the Green Building Certification Institute (GBCI), which was established

with the support of USGBC to allow for objective, balanced management of the credentialing program (6).

Who uses LEED?

Architects, real estate professionals, facility managers, engineers, interior designers, landscape architects, construction managers, lenders and government officials all use LEED to help transform the built environment to sustainability. State and local governments across the country are adopting LEED for public-owned and public-funded buildings; there are LEED initiatives in federal agencies, and LEED projects are in progress in 41 different countries (6).

How is LEED Developed?

LEED Rating Systems are developed through an open, volunteer and consensus-based process led by LEED committees that comprise a wide range of practitioners and experts in the building and construction industry. The key elements of USGBC's consensus process include a balanced and transparent committee structure, technical advisory groups that ensure scientific consistency and rigor, opportunities for stakeholder comment and review, member ballot of new rating systems, and a fair and open appeals process (6).

How to achieve LEED certification?

Visit the U.S. Green Building Council's LEED website @ http://www.usgbc.org/ for information on the LEED certification process, standards for specific project types, a list of LEED-certified products, directory of LEED AP's, information regarding training courses and a calendar of green building industry conferences (2).

Tips for getting a building in Sackets Harbor LEED Certified:

- Set a clear environmental target: Decide what level of LEED certification you want to achieve
- Set a clear and adequate budget: Fore example, the highest level of LEED certification, the Platinum level, will require additional expenditures and should therefore be budgeted properly
- Stick to your budget and your LEED goal: Make sure the entire team is focused on meeting your LEED goal on budget
- Engineer for Life Cycle Value: Examine green investments to determine how they will affect expenses over the entire life of the building. Before you decide to cut a line item, look first at its relationship to other features to find out if keeping it will help you achieve money-saving synergies or LEED credits
- Hire LEED-accredited professionals: Including architects, consultants, engineers, product marketers, environmentalists who have knowledge in green building practices and the LEED rating system. These professionals can assist you in meeting your LEED goal while suggesting ways to earn LEED credits without extra cost, identifying means of offsetting certain expenses with savings in other areas, and spotting opportunities for synergies in your project (2).

Architects:

AIA- American Institute of Architects

LEED A.P. - Leadership in Energy and Environmental Design Accredited Professional

Ashley McGraw Architects, P.C.

Award winning architectural firm with over 35 years' experience designing educational, institutional and municipal buildings, their commitment to sustainable and healthy green buildings resonates in each building they design. Most of their staff is LEED accredited under the USCBC's program

David Ashley- AIA, LEED A.P.
David Ashley was the first LEED A.P. in Central New York and is known for giving numerous lectures and seminars on green building principles; he conducts classes for becoming a LEED A.P. and assists in sustainable issues on all of his firm's projects

Diane Brandli - ASID, CID, LEED A.P., Director of Interior Design

Diane Brandli routinely incorporates sustainable products and strategies into her work, and her recent experience includes several LEED registered projects. She is a member of the USGBC Upstate New York Chapter, and was recently named the LEED for Schools Advocate for the Chapter, heading up a "Green Schools" campaign across the state

Robert Haley Jr. - AIA, LEED A.P. Urban Design Center of Syracuse (UDC)

Bob is Director of Design at Ashley McGraw Architects. He also acts as Vice Chair of the City of Syracuse Landmarks Preservation Board and is Co-Director and founder of the community planning and design "not-for-profit" Urban Design Center of Syracuse

Peter Larson- AIA, LEED A.P.
Leader of the Advanced Building Studio, a separate consultancy within Ashley McGraw, which is committed to implementing their goal of creating environmentally responsible, high performance buildings

500 South Salina Street
Syracuse, NY 13202
(315) 425-1811
Sandra March, Director of Business Development: march@ashleymcgraw.com
www.ashleymcgraw.com

Kenneth Bobis- AIA, LEED A.P.
Registered NYS architect, LEED A.P. and member of the USGBC, Kenneth is a professor at Onondaga Community College where he has taught design, construction, and drawing courses in the Architecture and Interior Design program for over twenty-five years. Throughout his teaching career he has stressed the importance of solar energy in building design
Onondaga Community College
Architecture & Interior Design
4585 West Seneca Turnpike
Syracuse, NY 13215
(315) 498-2171
bobisk@mail.sunyocc.edu

Kevin Stack- N.E. Green Building Consulting, LLC, President, N.E. Natural Homes
Owner of N.E. Green Building Consulting, Inc. (NGBC), a company based in Central New York that provides sustainability consulting, including bio-mimetic building and

community design services, Kevin integrates ecological standards into the built environment through a 7th Generation Sustainability Ethic, to restore human and ecological health. Kevin's related company N.E. Natural Homes, Inc. recently built the first LEED for Homes Certified project in NYS. Kevin is a LEED A.P., an Energy Star builder, and a Residential Energy Services Network (RESNET) Certified Energy Star rater. He is a Building Performance Institute certified Building Analyst and has completed several hundred energy ratings. He also advises colleges and universities regarding their construction management curriculums.
5110 Velasko Road
Syracuse, NY 13215
(315) 478-6016
kevin@ngbc.us
http://www.northeastnaturalhomes.com/

King & King Architects LLP
Green enthusiasts and strong proponents of sustainable design who are working to achieve environmentally sound solutions, they currently have eleven LEED AP's and are continuing to increase this number. They are pursuing LEED certification on several projects including the Gordon Student Center at Onondaga Community College, the Special Events Recreation Center at SUNY Brockport, and the Academic, Outreach, & Technology Transfer Facilities at SUNY ESF.
108 Washington Street
Manlius, NY 13104
(315) 682-6180
design@kingarch.com
www.kingarch.com

Lake Architectural Group
Founded in 2004 by Peter Sorber, AIA and Wayne La France, AIA, two highly experienced architects, Lake Architectural Group is a partner-owned, associates managed, architectural firm dedicated to designing uniquely functional solutions to build creative and environmentally responsible spaces, while establishing trustworthy relationships with their clients through equitable and rewarding partnerships. They are committed to embracing new technologies while continually striving to offer efficient and sustainable design solutions.
24 Maple Street
Marcellus, NY 13108
(315) 673-9333
peter@lakearchitectural.com
http://www.lakearchitectural.com/home/index.php

Engineers

Bernier, Carr & Associates, P.C.

Benjamin Walldroff, electrical engineer with Bernier, Carr & Associates, and his colleagues Michael Harris and Gregory Tomsic are all recognized as LEED AP's

327 Mullin Street

Watertown, NY 13601

(315) 782-8130

kreinhardt@thebcgroup.com

http://www.thebcgroup.com/

C&S Engineers, Inc.
C&S is implementing sustainable designs and construction processes to improve energy efficiency and reduce the burden on the environment while improving the health, well being, and productivity of the end users. They are involved in the design, commissioning, construction management and LEED certification on sustainable projects for higher education, K-12 schools, commercial facilities, and institutional projects. C&S is also a member of the USGBC
499 Col. Eileen Collins Blvd.

Syracuse, NY 13212

(315) 455-2000
contactus@cscos.com

http://www.cscos.com/services/sustainable-design

Klepper, Hahn & Hyatt
As a member of the USGBC, they are committed to the principles and practices of sustainable design of constructed facilities. With expertise in several of the LEED design categories, and from a landscape architecture and civil engineering perspective, they see site selection and layout, stormwater management, and vegetation selection as important aspects of sustainable design
5795 Widewaters Parkway
Syracuse, NY 13214
(315) 446-9201
rla@khhpc.com
www.khhpc.com

M/E Engineering, PC

M/E is a member of the USGBC and has nineteen professional staff accredited by the LEED program
441 S. Salina St. Suite 702
Syracuse, NY 13202
(315) 218-9564
fjstraub@meengineering.com
www.meengineering.com

Ram-Tech Engineers, PC
As a member of the USGBC, Ram-Tech Engineers are part of a growing community of engineering companies that are dedicated to developing green buildings through direct project application of green strategies and commissioning policies
6100 Fairway Dr.
P.O. Box 10
Syracuse, NY 13211
(315) 463-7716
mailcenter@ramtechengineers.com
www.ramtechengineers.com

RobsonWoese Inc.
Leader in the field of sustainable design and construction, their primary focus is on LEED consulting, building commissioning, energy modeling, green building design and green property management
5824 Widewaters Parkway
East Syracuse, NY 13057
(315) 445-2650
rwsyr@robsonwoese.com
http://www.robsonwoese.com/

Sack & Associates Consulting Engineers, PLLC
As a member of the USGBC, the firm specializes in energy conservation, building management, fire alarm, security, communications, HVAC, plumbing, and medical gas systems, as well as electrical lighting, power distribution, site lighting, cogeneration, and fire protection. Their team includes both licensed professional engineers and LEED AP's
721 E. Genesee St.
Syracuse, NY 13210
(315) 471-4013
mail@sack.pro
www.sack.pro

Green Building Construction

Bovis Lend Lease LMB, Inc.

One of the world's leading project management and construction companies that uses industry best practices when working with clients to create high quality, sustainable property assets
1451 Dryden Road
Freeville, NY 13068
(607) 347-6700
http://www.bovislendlease.com/

LeChase Construction Services
Building partner with experience in the LEED certification process and active member of the USGBC, their projects epitomize energy efficiency and seek to protect and enhance the environment
300 Trolley Blvd.
Rochester NY, 14606
(585) 254-3510
www.lechase.com

Green Building Supplies

Arxx Building Supplies
Arxx building products is listed in the Building Green- Green Spec guide as a recognized green building product. The Arxx High Performance Wallsystem may be designed as a major part of the exterior wall for residential or commercial buildings, Arxx forms may also be used for interior partitions, demising walls, fire walls, and below grade foundation walls. Building with Arxx makes it easier to construct Energy Star homes as well as achieve LEED points for commercial and residential construction
Seaway Wall Distributing Inc
43278 Seaway Ave
Alexandria Bay, NY 13607
jef@arxx.net
(315) 482-5253
http://www.arxx.net

Boylan Marble & Terrazzo Restoration Ltd
Specialists in the green and sustainable restoration & repair of natural stone and terrazzo nationwide
1816 West Elm Street
Oneida, NY 13421
315-363-4357
www.boylanstonerestoration.com

EcoStar
Using only sustainable building products, EcoStar provides high quality, competitively priced premium steep slope roofing products to emulate slate and shake roofing products using rubber and plastics technology

P.O. Box 7000
Carlisle, PA 17013
(800) 211-7170
http://www.ecostar.carlisle.com

Edco Sales, Inc.
Manufacturer and distributor for several quality product lines needed to maintain indoor air quality
700 Emerson Avenue
Syracuse, NY 13204
(315) 468-3849
Edco@EdcoFilter.com
http://www.edcofilter.com

Forbo Flooring Systems
Forbo Flooring Systems apply Life Cycle Analyses (LCA) to their products to determine the potential environmental impacts of a product over its lifecycle, from the extraction of the raw materials to the disposal of the product at its end life. The results of an LCA of a number of floor coverings ranked Marmoleum first and Artoleum as a nature-friendly floor covering, together with pure, unlacquered wood. They are also the "natural" choices when health concerns are involved and are therefore broadly applied in many hospitals and classrooms, as well as being recommended by medical professionals to people with respiratory disorders. Forbo flooring is available for both commercial and residential use.
2 Maplewood Drive, P.O. Box 667
Humboldt Industrial Park
Hazleton, PA 18201
1-800-842-7839
info@fL-NA.com
www.forboflooringNA.com

Gregory McCartney- Artistry in Wood of Syracuse, Inc
Owner of Artistry in Wood, McCartney began adopting green manufacturing practices a couple of years ago after customers began requiring environmentally friendly products. Products include wood furniture, bookshelves and display cases for libraries
6804 Manlius Center Road
East Syracuse, NY 13057
(315) 431-4022

Levanna Restoration Lumber

Offering wide plank flooring and accessories made from reclaimed woods from the finest historical barns in Central New York, they are known for being environmentally responsible and for providing customers with an authentic piece of history and look.

Their floors, mantels, paneling, timbers and stair components in distinctive interiors can be found in homes, camps, lodges, and commercial & retail establishments

Auburn, NY 13021

(315) 252-6817

info@LevannaRL.com

http://www.levannarl.com/contact[1].htm

Pella Window and Doors
As a member of the USGBC, Pella encourages the use of the LEED certification process and offers products that can contribute to more than 20 of 69 possible points. As a result, Pella products have been used in a number of nationally recognized green projects including the Phillip Merrill Environmental Center (LEED Platinum) and Island Wood (LEED Gold)
6181 Thompson Road Suite 600
Syracuse, NY 13206
315-438-4304
http://web.pella.com/Pages/default.aspx

Links:

http://www.usgbc.org/
The U.S. Green Building Council is a 501(c)(3) non-profit organization that certifies sustainable businesses, homes, hospitals, schools, and neighborhoods. They are dedicated to expanding green building practices and education, and its LEED Green Building Rating System

http://www.buildgreenschools.org/

Not only do green schools cost less to operate but they also create a healthier and more comfortable environment for learning by producing abundant daylight and increasing air quality, which results in less sick days. School districts are now realizing the numerous benefits that come along with building with LEED for schools. This site is a great way to find out what you can do to start making a change in your community by learning about LEED, the national benchmark for high-performance schools, what makes green schools better for students, read up on the most recent green schools news and find videos, research, case studies and other resources. Don't wait around, get involved now!

http://www.esf.edu/outreach/pd/2008/gbc/default.htm
Home page for the Seminar on Green and Sustainable Schools II and the 6th Annual Green Building Conference

http://www.myfootprint.org/en/
Visit this site to determine how big your ecological footprint is. The ecological footprint quiz estimates the amount of land and ocean area required to sustain your consumption patterns

http://www.greendepot.com/
This site provides information about environmental living and building for both homeowners and professional and is a great resource for all your green building needs. Make sure you check out the resources section, which provides great links to more information about green building and living

http://www.greenhomeguide.org/
This site provides a number of great ideas and is a great resource to learn the health and economic benefits associated with green building and to connect with others living in or building green homes

www.greenbuildexpo.org
Visit this site to register for a three day expo of green building speakers, educational sessions, opportunities for networking and the latest information about green products

NYS Upstate Chapter
www.greenupstateny.org

http://www.iaqtechnologies.com/
This site provides solutions for healthier indoor environments

Syracuse Center of Excellence in Environmental and Energy Systems
http://www.syracusecoe.org/
Comprised of more than 200 businesses and institutions, the Syracuse CoE is focused on research and innovation to improve health, productivity, security and sustainability in built and urban environments. Their three main focus areas include indoor environmental quality, clean and renewable energy and water resources

http://www.GreatGreenList.com
The world's largest directory of eco-friendly products, services, companies, trade shows, bloggers, and data sources. Exclusively edited by a dedicated team of web editors, this site is designed to get consumers the information they need quickly. Great Green List has over 4,000 links and is growing exponentially

http://www.nesea.org/

The Northeast Sustainable Energy Association (NESEA) is the Northeast's leading organization of professionals working in sustainable energy, whole-systems thinking and green technologies. NESEA advances the adoption and practical application of sustainable, low carbon energy practices. NESEA accomplishes this through a number of ongoing programs and annual events. NESEA is a proud chapter of the American Solar Energy Association (ASES)

http://www.northeastengineers.com/
Northeast Engineers is committed to the environmental, economic, and health benefits of green building, engineering, design and construction

http://www.buildinggreen.com/
This site provides information on green building, the LEED rating system, green products and more!

www.sbicouncil.org
The Sustainable Buildings Industry Council (SBIC) was founded by the major building trade associations in 1980 as the Passive Solar Industries Council. Their work touches on all aspects of sustainable design and construction, including energy efficiency, renewable technologies, day lighting, healthy indoor environments, sustainable building materials and products, and resource conservation to help make integrated, better buildings possible.

Sources

1) *Green Depot: What is LEED?* (n.d.). Retrieved April 25, 2008, from http://www.greendepot.com/leed_tabs/what_is_leed

2) Natural Resources Defense Council. *Building Green from Principle to Practice: LEED Certification information.* (n.d.). Retrieved April 23, 2008, from http://www.nrdc.org/buildinggreen/leed.asp

3) U.S. Environmental Protection Agency. *Why Build Green?* (2008, April 16). Retrieved April 24, 2008, from http://www.epa.gov/greenbuilding/pubs/whybuild.htm

4) U.S. Green Building Council. (2008). Retrieved April 23, 2008, from http://www.usgbc.org/Default.aspx

5) U.S. Green Building Council. *Green Building Research*. (2008). Retrieved April 24, 2008, from http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1718

6) U.S. Green Building Council. *LEED Rating Systems.* (2008). Retrieved April 24, 2008, from http://www.usgbc.org/DisplayPage.aspx?CMSPageID=222

Sustainable Community Agriculture

"There is a quiet revolution stirring in our food system. It is not happening so much on the distant farms that still provide us with the majority of our food; it is happening in cities, neighborhoods, and towns. It has evolved out of the basic need that every person has to know their food, and to have some sense of control over its safety and security… it is providing an oasis for the human spirit where urban people can gather, preserve something of their culture through native seeds and foods, and teach their children about food and the earth. The revolution is taking place in small gardens, under railroad tracks and power lines, on rooftops, at farmers' markets, and in the most unlikely of places. It is a movement that has the potential to address a multitude of issues: economic, environmental, personal health, and cultural."[1]

-Michael Ableman

What is sustainable community agriculture?

Sustainable community agriculture is a practice intended to strengthen the community while lowering the human impact on land that occurs as a result of food production. It is an answer to the negative impacts associated with conventional/industrial agriculture. Ecological consequences of conventional agriculture include: soil mining, non-point source of water pollutants, water scarcity, and elevated levels of greenhouse gases. [2] Social consequences include: distributive inequity, breakup of local communities, and malnourishment. "Sustainable agriculture is one that equitably balances concerns of environmental soundness, economic viability and social justice among all sectors of society."[3]

What does it look like?

Sustainable community agriculture comes in many forms. It can be a thriving organic vegetable garden maintained in your backyard that allows you and your neighbors the opportunity to taste the freshest ingredients in your 'talk of the town' seasonal roasted veggies. It is that market that you stumbled upon in Syracuse that people kept referring to as "the CoOp." Or maybe you stopped at a farm stand on your way home from work to pick up something for dinner. They are all windows into a sustainable way of eating.

Building a Food Secure Sackets Harbor

A food secure community is one where each member obtains a "safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance and social justice." [4] Building food security is a rewarding process both for the neighborhood and the ecosystem in which it depends. The following sections illustrate the various types of sustainable agriculture that can be used to facilitate community food security.

Community Gardens

As the name suggests, a community garden is a place in the community where a group gardens. Instead of leaving a piece of land vacant or spending a considerable amount of fossil fuel energy on maintaining a grassy area, why not establish a garden accessible to the entire community?

Community Gardening Benefits [5]:

- Improves the quality of life for people in the garden
- Provides a catalyst for neighborhood and community development
- Stimulates Social Interaction
- Encourages Self-Reliance
- Beautifies Neighborhoods
- Produces Nutritious Food
- Reduces Family Food Budgets
- Conserves Resources
- Creates opportunity for recreation, exercise, therapy, and education
- Reduces Crime
- Preserves Green Space
- Creates income opportunities and economic development
- Reduces city heat from streets and parking lots
- Provides opportunities for intergenerational and cross-cultural connections

The American Community Gardening Association has created a wonderful fact sheet that will assist any group hoping to create a community garden with information from forming a planning committee to managing the garden. To find the document visit their website at http://www.communitygarden.org/learn/.

Backyard (or Front yard) Organic Gardens

A survey by the National Gardening Association found that "among the 90 million U.S. households that have a yard and garden there are four types of gardeners" [6]:

- Conventional gardeners use only synthetic fertilizers and pest controls.
- Hybrid gardeners use both synthetic and all-natural fertilizers and pest controls.
- Organic gardeners use only all-natural fertilizers and pest controls.
- Do-nothing gardeners don't use any fertilizers and pest controls.

According to the study, 5 million Americans are organic gardeners. The most ecologically friendly way to construct and maintain a garden is through organic methods. Growing organically simply means that no synthetic fertilizers or pest controls are being used.

School Gardens/Edible Schoolyard

A garden on the school grounds is a priceless learning source. Students and teachers can work together to learn about living systems and ecology that is behind growing the food we eat to fuel a healthy lifestyle.

The garden creates lessons for science and health, as the students learn about nutrients that make both plants and animals grow, and the cycles of these nutrients. Students can even learn to design and create the garden as many schools have taught their young students to plan and be leaders and work together. Every subject learned by students can be found in their schoolyard garden, and this helps them incorporate lessons from school into their daily lives.

The Edible Schoolyard started by Alice Waters at the Martin Luther King, Jr. Middle School in Berkeley California can serve as an excellent model for the Sackets Harbor School garden. Their website supplies many links to other schools across the country who have gardens, and how they were able to organize and create their garden classroom for their children and future.
http://www.edibleschoolyard.org/how_res.html

One great website with ideas and funding resources is:
http://www.kidsgardening.com/
This website also talks about school greenhouses.

Every lawn a garden

Sources

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[2] Gold, Mary. United States Department of Agriculture. Sustainable Agriculture Definitions and Terms. (http://www.nal.usda.gov/afsic/pubs/terms/srb9902.shtml#top)
[3] Allen, P, D. Van Dusen, J. Lundy and S. Gliessman. 1991.
Integrating social, environmental, and economic issues in sustainable agriculture. American Journal of Alternative Agriculture 6(1):34-39.
[4] Hamm, M. W., & Bellows, A. C. (2003). Community food security and nutrition educators. Journal of Nutrition Education and Behavior, 35(1), 37-43.
Holben, D. H. (2002). An overview of food security and its measurement. Nutrition Today, 37(4), 156-162.
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[6] National Gardening Association. How Many Organic Gardeners Are There? (http://www.gardenresearch.com/)
[7] Katherine H. Brown, Urban Agriculture and Community Food Security in the United States: Farming from the City Center to the Urban Fringe by the Urban Agriculture Committee of the CFSC, February, 2002
[8] http://www.cityfarmer.org/barrsUAvanc.html#pt1

Additional Resources

American Community Gardening Association

The American Community Gardening Association (ACGA) is a bi-national nonprofit membership organization of professionals, volunteers and supporters of community greening in urban and rural communities. The Association supports community gardening by facilitating the formation and expansion of state and regional community gardening networks; developing resources in support of community gardening; and, encouraging research and conducting educational programs.
http://www.communitygarden.org/

Community Food Security Coalition
The Community Food Security Coalition (CFSC) is a North American organization of social and economic justice, environmental, nutrition, sustainable agriculture, community development, labor, anti-poverty, anti-hunger, and other groups. We provide a variety of training and technical assistance programs for community food projects; support the development of farm to school and farm to college initiatives; advocate for federal policies to support community food security initiatives; and provide networking and educational resources.
http://www.foodsecurity.org/

Organic Consumers Association
The Organic Consumers Association (OCA) is an online and grassroots non-profit 501(c)3 public interest organization campaigning for health, justice, and sustainability.
http://www.organicconsumers.org/

Local Harvest
Local Harvest is an internet guide to sustainably grown food. The consumer may easily navigate the local food web by entering a search according to product type and location.
http://www.localharvest.org/

Sustainable Table
Sustainable Table celebrates the sustainable food movement, educates consumers on food related issues and works to build community through food.
http://www.sustainabletable.org/

National Gardening Association Food Gardening Guide
http://www.garden.org/foodguide/browse

Organic Gardening Magazine Online
http://www.organicgardening.com/

A community Garden

http://www.uwex.edu/ces/cty/oconto/wnep/CommunityGardenpictures.html

A front yard garden

http://www.fritzhaeg.com/garden/initiatives/edibleestates/nyc-suburbs.html

Development

As we face growing populations it is important to take the increase in people and the resources and amenities they will require into account in development plans. It is important to plan ahead and be ready for the increased pressures on transportation, land use, housing, sewage and water systems, schools, and the various businesses. In order to strive for a sustainable Sacket's Harbor, other development and redevelopment plans can be used as examples of what to do, and also what not to do.

Collinstown Village Plan
http://www.westmeathcoco.ie/docs/planning/Collinstown%20Adopted%20Village%20Plan.pdf

Development plan for the village of Baltimore
http://www.baltimoreohio.org/ludp.html

Development plan for the village of Skokie
http://www.skokie.org/comm/compplan.html

Redevelopment plan for East Village in the City of Calgary
http://www.calgarymlc.ca/pdf/8027_east_village_arp_part1o2.pdf

Funding

Federally Funded Programs

Federal Environmental Response and Spill Compensation Fund – Navigation Law Article 12. This fund is available to states to implement investigation and clean up of petroleum discharges and removal of underground storage tanks. The fund is also available to compensate injured parties, including municipalities that have lost revenue as a result of the discharge of petroleum.

Industrial Finance Program. Provides low interest loans to provide businesses for environmental improvement capital projects, including brownfield site remediation and solid waste management.

Section 108 Federal Loan Guarantees. A HUD program that may be applicable to the industrial site reuse effort. Eligible projects include rehabilitation of obsolete structures, property acquisition and site preparation activities that could include removal of contamination from a property.

U.S. Department of Commerce Economic Development Administration. Grants are available to assist economic development projects.

The Environmental Protection Fund. A legislatively designed long-term source of revenues available to meet the pressing environmental needs of the state. A portion of this funding is administered by NYS DOS.

Land and Water Conservation Fund. Federal monies allocated to the states by the Department of the Interior for land acquisition and development of outdoor recreation.

Pittman-Robertson Program. Also known as the Dingell-Johnson program and amended by the Wallop Breaux Act, collects taxes on sport fishing and related items and returns the monies to the states for use in fisheries management and research programs.

Forest Legacy Program. Federal monies designed to identify and protect environmentally sensitive forests that are threatened with conversion to non-forest uses.

Environmental Benefit Project Funds and Natural Resource Damages. If appropriate and in accord with law and guidance, may be provided for open space conservation.

Migratory Bird Stamp and Print. A dedicated source of review for the management and acquisition of wetlands and associated migratory bird habitat in New York State and Canada.

Federal Non-Game Wildlife Funding Initiative. Under consideration by the International Association of Fish and Wildlife Agencies, would provide a flexible program of grants to

the states, funded through the federal excise tax on backpacks, mountain bicycles, tents, climbing gear, and similar outdoor recreational equipment.

The National Park Service, Historic Preservation Fund. Certified Local Government Program - The National Park Service supports several activities related to this LWRP/HAMP, these include among others a matching grant program for the expansion and maintenance of the National Register of Historic Places and support of historic preservation activities. Certified Local Governments may apply for survey and inventory activities.

The National Park Service also assists with National Heritage Corridor and heritage tourism projects.

National Trust for Historic Preservation - National Preservation Loan Fund. Awards are primarily loans that can be used to acquire, restore or rehabilitate historic buildings, sites and districts for use, lease or resale; and to provide special assistance for National Historic Landmarks. Federal tax incentives also come into play for commercial properties on the National Register of Historic Places. For these properties, owners that have SHPO approved rehabilitation plans may, upon successful completion and final SHPO sign-off, then apply for Federal income tax credits in the amount of 20% of the construction costs.

The National Main Street Center, sponsored by the National Trust for Historic Preservation, helps downtowns build strong economic development programs through historic preservation. Through the Main Street Center, Sackets Harbor can get guidance on such issues as storefront improvement programs, historic tax credits, and "placemaking on a budget."

National Recreation Trails Act Program. A matching grant program for the acquisition, development, rehabilitation and maintenance of trails and trail related projects. Funded projects must be identified in, or further a specific goal of, the SCORP and must be available to the general public. Source of funds: Federal Highway Administration.

U.S. Department of Commerce - Economic Development Administration, Economic Development. Provides funds in the form of low interest loans and grants for job creation and economic development projects. Grants for Public Works and Development Facilities promote long-term economic development and assist in the construction of public works and development of facilities needed to initiate and encourage the creation or retention of permanent jobs in the private sector in areas experiencing severe economic distress. Grants are awarded for such public facilities as water and sewer systems, industrial access roads to industrial parks, port facilities, railroad sidings and spurs, tourism facilities, vocational schools, business incubator facilities and infrastructure improvements for industrial parks.

Federal Land and Water Conservation Fund. The Land and Water Conservation Fund (LWCF), a dedicated fund, provides grants to states for the acquisition, development,

and/or rehabilitation of outdoor park and recreation facilities. Funded projects must reflect the priorities established in SCORP and be available to the general public.

Environmental Protection Agency. Several grant programs are available as well as tax incentives. The New York State Office of Parks and Recreation (NYSOPRHP) administer some of these programs. Please see the discussion of funding sources available through NYSOPRHP under state funds.

Department of Energy
The Office of Energy Efficiency and Renewable Energy (EERE) works to increase the use of renewable energy and energy efficiency technologies. EERE offers financial assistance opportunities for their development and demonstration.

Enterprise Green Communities
Green Communities provides grants, financing, tax-credit equity, and technical assistance to developers who meet the criteria for affordable housing that promotes health, conserves energy and natural resources, and provides easy access to jobs, schools and services.

Federal Government Federal Tax Credits for Energy Efficiency
The Energy Policy Act of 2005 includes tax credits to consumers for energy efficiency home improvements, specific automobiles, and installation of solar energy systems and fuel cells. Tax credits are also available for home builders and appliance manufacturers, and tax deductions are available for commercial buildings that meet specific efficiency standards.

The Funders' Network
The Funders' Network for Smart Growth and Livable Communities is a non-partisan, not-for-profit organization that exists to inspire, strengthen and expand philanthropic leadership and funders' abilities to support organizations working to improve communities through better development decisions and growth policies.

The Home Depot Foundation
The Home Depot Foundation provides grants to eligible nonprofits, three times a year, under two different programs: the Affordable Housing Built Responsibly Program and the Healthy Community Trees Program.

Kresge Foundation
The Foundation's Green Building Initiative is intended to increase the awareness of sustainable or green building practices among nonprofits and encourage them to consider building green. The Initiative offers educational resources and special grants to help nonprofits.

Smart Communities Network

List of public and private sources for grants and other funding opportunities for research and building projects in sustainable design and development, municipal energy financing and other partnership opportunities.

The Tax Incentive Assistance Project (TIAP) provides information for consumers and businesses to make use of the federal income tax incentives for energy efficient products and technologies (specified in the Energy Policy Act of 2005).

State Funded Programs
Agricultural and Farmland Protection Implementation Projects. This annual program, administered by the New York State Department of Agriculture and Markets, provides matching grant funds to local municipalities to support local farmland protection plans and purchase the development rights to permanently protect viable farmland.

The New York State Clean Water/Clean Air Bond – Environmental Conservation Law Article 56. Project eligibility should be evaluated under different Bond Act funds, including the Safe Driving Water Fund (Title 2), the Clean Water Fund (Title 3), and the Municipal Environmental Restoration Project Fund (Title 5).

The New York State Environmental Protection Fund – Quality Communities Grant. The program, administered by the Department of State, is designed to increase the capacity of local governments to engage in effective planning for long-term community and regional vitality. Types of projects which could be funded in
Sackets Harbor include:
• Intermunicipal Growth Program
• Community Growth Program
• Community Center Program
• Community Open Space Program

Clean Water State Revolving Fund for Water Pollution Control. Financing is available to respond to non-point source pollution projects. Non-point source refers to water pollution from diffuse sources that are not directly related to a piped discharge. Examples include remediation of contamination from leaking underground storage tanks or collection and treatment of road runoff, and water body restoration such as stream bank stabilization, drainage erosion, and sediment control.

The State Revolving Fund Program is one of the largest environmental infrastructure financing programs in the nation. Three primary loans are available through EFC: Bond-Funded Loans, Financial Hardship Loans, (including interest-free long-term), and Interest-Free Short-Term (up to two years). Community Development Block Grant (CDBG). This program provides direct funding from the Department of Housing and Urban Development (HUD) for activities that support the reuse of industrial sites. CDBG funds are used for grants, loans, loan guarantees, and technical assistance activities. Formally a federal program, New York State has been administering the program since 2000.

New York State and U.S. Department of Transportation. Grants and loans may be available pursuant to the DOT Transportation Efficiency Act (TEA210), formerly ISTEA.

Transportation Efficiency Act (TEA-21) Enhancement Funds. Enhancement Funds could be used for design and construction of waterfront transportation projects as well as projects (trails) that enhance existing transportation facilities. This program is a Federal reimbursement program administered by the New York State Department of Transportation (NYSDOT) to fund projects outside the norm of traditional transportation programs by addressing the cultural, aesthetic, historic and environmental aspects of intermodal transportation networks.
New York State Nonpoint Source Implementation Grants Program. The NYSDEC has a grant program under its Nonpoint Source Implementation Grants Program. The program provides grants for up to fifty percent (50%) of the cost of eligible nonpoint source water pollution assessment, planning, and abatement projects.

Biodiversity Stewardship and Research Fund. A legislatively designed vehicle to receive funds from a variety of sources; federal, state, and private; to support biodiversity stewardship, research, and education in New York State.

Return a Gift to Wildlife. A state income tax donation program. The revenues are used for a variety of projects that benefit fish and wildlife.

State Revolving Loan Fund. Provides low-interest loans to municipalities to construct and expand sewage treatment facilities. Continuation of the state revolving loan fund depends on periodic reauthorization of the Clean Water Act with grants to states to capitalize the loan fund.

New York State, Department of State Division of Coastal Resources - Coastal Zone Management Program and Local Waterfront Revitalization Program Grants. The Division of Coastal Resources oversees the administration of grant awards under the Environmental Protection Fund (EPF). The EPF provides Title 11: Local Waterfront Revitalization Program Grants for planning, design and feasibility studies, and construction projects that advance preparation or implementation of Local Waterfront Revitalization Programs on a 50/50
matching basis. Eligible activities for funding include:
• General local waterfront revitalization program preparation/ implementation;
• Inter-municipal water body management plan preparation/ implementation;
• Waterfront redevelopment; and
• Innovative use and processing of dredged material; public coastal education and tourism.

New York State, Office of Parks, Recreation and Historic Preservation (OPRHP) Grant-In-Aid Programs. The NYSOPRHP administers several grant-in-aid programs to local communities. Many of the grant-in-aid programs require a local match in funds. Some of

these programs are funded under the Clean Air/Clean Water Bond Act of 1996 and The Environmental Protection Act of 1993 (Environmental Protection Fund), while others are not.

Under the Bond Act, funds are available for a variety of proposed projects, including water quality improvement projects; parks, historic preservation and heritage areas; and open space and other programs. Types of projects that could be funded in Sackets Harbor include:

• Parks Program (Bond Act) - A matching grant program for the acquisition or development of parks and recreational facilities for projects to preserve, rehabilitate or restore lands, waters or structures for park, recreation or conservation purposes. Funds may be awarded to municipalities or not-for-profits with an ownership interest, for indoor or outdoor projects and must reflect the priorities established in the NY Statewide Comprehensive Outdoor Recreation Plan (SCORP)

• Historic Preservation Program (Bond Act) - A matching grant program to improve, protect, preserve, rehabilitate or restore properties listed on the National or State Registers of Historic Places. Funds are available to municipalities or not-for-projects with an ownership interest.

• Heritage Areas Program (Bond Act)- A grant program for projects to preserve, rehabilitate or restore lands, waters or structures, identified in a management plan approved by the Commissioner. Projects must fall within a New York State Designated Heritage Area.

• Acquisition - A matching program for the acquisition of a permanent easement or fee title to lands, waters or structures for use by all segments of the population for park, recreation, conservation or preservation purposes. To be used for all three program areas where acquisition is of more important than development.

• Barns Restoration and Preservation Program - A matching grant program for restoration and
preservation of agricultural buildings, including barns, sheds and silos, that were constructed at least fifty (50) years prior to the date of the grant application, and in need of repair. The applicant must have a significant ownership interest in the property.

• Snowmobile Trail Grant Program - A grant program that allocates funds to local governments that engage in the development and maintenance of snowmobile trails designated as part of the State Snowmobile Trail System. The authorization for the program is found in Article 27 of NY

Parks, Recreation and Historic Preservation Law. Funding is allocated on a pro-rated basis.

Open Space and other Programs (Bond Act) - provides funding to acquire valuable open spaces that will protect water resources, correct environmental deficiencies at state facilities, help small business comply with environmental laws and improve the safety of dams and flood control structures throughout New York.

Under the EPA's Environmental Protection Act of 1993, NYSOPRHP can administer matching funds from the Environmental Protection Fund to local communities for a

variety of projects. The following programs most apply to the proposed projects within the Lakefront area, as described in Section 4.0 of the LWRP/HAMP.
Other grant-in-aid programs administered by NYSOPRHP that could benefit the Sackets Harbor include:
• Environmental Restoration Brownfields - provides financial assistance to municipalities for the investigation and/or clean up of municipally owned potential contaminated properties. These properties can then be returned for productive use or used for redevelopment purposes.
• Legislative Initiative Program - A program of the NYS Legislature administered by State Parks for park, recreation and historic preservation and cultural projects and programs of local governments and not for-profits.
• Navigation Law Enforcement Program - A program offering up to 75% reimbursement for costs incurred by municipal police agencies in the enforcement of Navigation laws and regulations.
• The New York State Environmental Facilities Corporation - Provides low interest loans to
municipalities from the Clean Water State Revolving Fund (CWSRF). These loans can be used to construct wastewater facilities that reduce or prevent water pollution. Projects must be publicly owned to be eligible for financing and address issues of water quality protection. Project categories include:
o Point source treatment works (related to a piped discharge);
o Non-point source projects (water pollution from diffuse sources not directly related to a piped discharge); and
o National estuary conservation and management projects at USEPA designated estuaries.

Interstate Renewable Energy Council
The Database of State Incentives for Renewable Energy (DSIRE) is a comprehensive source of information on state, local, utility, and selected federal incentives that promote renewable energy.

The National Association of State Energy Officials (NASEO) provides links to current funding opportunities for energy efficiency, renewable energy, sustainable development and related environmental projects

New York State Department of Environmental Conservation
The Department manages and administers the Green Building Tax Credit program that provides tax credits to owners and tenants of green buildings which increase energy efficiency, improve indoor air quality, and reduce the environmental impacts of large commercial and residential buildings in New York.

Locally Funded Programs
Projects most appropriate for local funding include smaller scale park and recreation improvements, including:
• Trail development projects that can utilize in-kind services; and
• Street improvement projects that can be incorporated into capital improvement programs

Capital Improvements Program - The Village of Sackets Harbor can undertake infrastructure improvement projects within the waterfront revitalization area as part of its annual expenditures under its capital improvement program.

Business Improvement District (BID) - Business improvement districts are established by local business interested in improving the area in and around their businesses. These businesses in essence form a partnership where each business contributes funds to offset the cost of improvements within the district. Together, this partnership decides how to allocate the funds for needed improvements. Such improvements may include the addition of streetscape elements such as benches, plantings, decorative lighting and signage, improvements to sidewalks, enhanced maintenance to public spaces, as well as the coordination of special promotion services and events.

Special Assessment District - Similar in all respects to a BID except the funds for the improvements are held by an entity or organization, such as a chamber of commerce, rather than the business partnership. This entity operates in an oversight capacity by controlling the expenditure of funds and coordinating the scheduling of special promotion services and events, as well as improvements with contractors and/or the involved municipality.

The Local Government Commission
The Local Government Commission (LGC) is a nonprofit, nonpartisan, membership organization that provides inspiration, technical assistance, and networking to community leaders who are working to create healthy, walkable, and resource-efficient communities.

Privately Funded Programs
Andy Warhol Foundation for the Visual Arts - This foundation supports the "advancement of the visual arts, including curatorial research, freedom of artistic expression, contemporary art, and historic preservation. The foundation believes that a nation's historic properties serve not only as witness to the aesthetic sense and way of life of past generations but also as contemporary society's anchor to a strong sense of place." Historic preservation grants are given to organizations working to preserve historic buildings, districts and landscapes, and to promote historic properties as "living things". Property must be of architectural, historic or cultural significance.

Getty Grant Program - Architectural Conservation Grants. Assist in the conservation of properties of outstanding architectural, historical and cultural importance. Funds can be

used for planning purposes that advance the conservation of historical building fabric as well as for the implementation of plans to preserve and stabilize these buildings.

Private Foundation Grants. The Environmental Grantmaker's Association, 1290 Avenue of the Americas, Suite 3450 New York, New York, 10104 compiles a listing of hundreds of potential foundations and trusts which may provide funding assistance to creative environmental/economic development initiatives.

Gifts and Donations. A way for individuals and businesses to contribute directly to the conservation of open space through donations of land or easements.

Preserve New York Grant Program. The Preserve New York Grant Program provides support for three types of projects: cultural resource surveys, historic structure reports, and historic landscape reports. An applicant must be a not-for-profit group with tax-exempt status or a unit of local government. State agencies and religious institutions are not eligible to apply. The program generally provides only partial support on a competitive basis. Grants are likely to range between $3,000 and $15,000.

The Bonneville Environmental Foundation (BEF) was founded in 1998 to support watershed restoration programs and develop new sources of renewable energy. Funding for these efforts has been provided in a way that would be called unusual for most foundations. BEF, a non-profit organization, markets green power products to public utilities, businesses, government agencies and individuals.

Charrettes Grants
Grants for up to $5,000 to assist housing developers with integrating green building systems in their developments and engage in a serious discussion of green design possibilities. Enterprise will award planning grants to affordable housing developers to coordinate a green design charrette (http://www.greencommunitiesonline.org/tools/funding/grants/charrette.asp).

Enterprise offers grants to help cover the costs of planning and implementing green components of affordable housing developments, as well as tracking their costs and benefits. Grants up to $50,000 cover planning and construction (http://www.greencommunitiesonline.org/tools/funding/grants/planning.asp) expenses including additional costs of architectural work, engineering, site surveys and costs associated with items such as a more efficient HVAC system, green materials and energy efficient appliances.